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ORIGINAL ARTICLES.

REPORT ON ABDOMINAL AND PELVIC SURGERY.

Report of the Chairman of the Committee on Abdominal and Pelvic Surgery, read before the Kentucky State Medical Society, May 6, 1892.

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There is probably no department of surgery that has been carried to a greater extreme by enthusiasts and record makers than laparotomy. This fact has become so flagrantly manifest that there is a general protest from the honest, learned and conservative abdominal and pelvic surgeons against the unnecessary and sometimes criminal mutilation of women by ignorant and unscrupulous men.

At the meeting of the American Gynecological Society at Washington, in September, 1891, composed of men who are as learned and successful surgeons as any in the world, there was a determined and nearly universal effort to impress upon the medical profession the wisdom and benefits of conservative gynecology, and the evil of too much needless mutilation in laparotomy. Dr. A. Doleris has fearlessly discussed the subject "Too many Needless Mutilations—not enough Conservative Gynecology," in the July and August numbers of the *Nouv. Arch. d'Obst. et de Gyn.* His extensive gynecological practice affords excellent opportunities for observation, and his conclusions are that eight-tenths of the women upon whom laparotomy or hysterectomy has been done, submitted needlessly to the operation, and that in Paris alone there are four thousand women who have been deprived of their ovaries or uteri without sufficient cause.

While I offer no apology for any one who does these operations where they are not indicated because of ignorance or for the purpose of making a record of a series of successful laparotomies, I am sure the abuse is not so far-reaching in this country.

From an abstract of Doleris' paper in the January (1892) number of the *Amer. Journal of Obstetrics and Diseases of Women and Children*, I quote the following:

> This is an age in which unscrupulous and unreasoning operative boldness, more or less helped out by antisepsis, too often takes the place of true surgical knowledge. Hysterectomy and laparotomy are undertaken apparently for the sole purpose of increasing the physician's list of operations performed; only the immediate result is taken into account, while those who stop to ask whether less radical measures would afford the desired relief are few in number. . . . . .
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> In the report of hysterectomies the whole truth is unfortunately not always told. One operator has claimed that the patient *obliged* him to operate. After palpation and prolonged internal examination, the diagnosis was still utterly beclouded. He performed hysterectomy, and removed uterus, tubes and ovaries, all in a *perfect condition of health*. Could the patient have forced him to throw her out of the window? . . . . .
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> Can it be that operations are performed principally that young surgeons may acquire experience and dexterity, and that, if legitimate subjects of operation are wanting, the accommodating operator will perforce content himself with what he can get? . . . . .
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> Neophytes in gynecology seem to have but one idea—laparotomy, sensational operation, a round dozen of castrations to start off with! Cases suddenly assume a dangerous aspect, and if nothing dangerous can be made of them, at least they necessitate an exploratory incision; but the abdominal wound is rarely closed without the extraction of—something. This is not gynecology, it is merely surgical license. Let the extremists beware! They are playing with edged tools. In the course of time people will no longer be taken in by their affectation of simplicity, their occasional acknowledgment of error—"very deplorable, no doubt"—and their absolute mania for operating. . . . . .
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> But in the face of threatened danger the honest man can scarcely adopt the principles of *laisser faire*, nor can the real gynecologists, who desire the good of their patients and who wish to be worthy of their profession, hold their peace when they witness the excesses committed in the name of abdominal surgery.

Cases are not wanting in any large city to verify, in a degree, the severity of these criticisms. A lady was referred to me by her consulting physician. Her physician had diagnosticated extra-uterine pregnancy at four and one-half months, and had urged her to allow him to do a laparotomy and remove it. He had dilated the cervix and had introduced a sound into the uterus. This gentleman had successfully operated upon another woman for an extra-uterine pregnancy. The history of the case did not show a symptom of extra-uterine pregnancy, and in an examination a typical intra-uterine pregnancy was at once diagnosticated; the finger could be easily introduced through the dilated internal os, and the presenting head of the child distinctly felt. I could not understand why her doctor suspected extra-uterine pregnancy, but had it not been for the wisdom and conservatism of her consulting physician, an unnecessary and probably fatal laparotomy would have been done.

Some months since a lady consulted a progressive abdominal surgeon, who diagnosticated an ovarian cystoma and recommended an ovariotomy. The woman was delivered of a fully developed child some months later, and the tumor suddenly disappeared. The same gentleman was consulted by another lady and again diagnosticated an ovarian cystoma, and sent her home to return in a few weeks for an operation. Her home physician was consulted and discovered that there was no tumor, but that his patient was five months pregnant. The same physician examined another lady and told her that he had not seen more extensive pelvic adhesions, and that her uterus, ovaries and tubes were firmly bound down, that she could

never become pregnant and that a laparotomy must be done and the ovaries and tubes removed. She was not operated upon, but two months later conceived and carried her child to term without an untoward symptom, and is now a happy mother. In another instance he insisted on doing a laparotomy at night because if he delayed until morning it would be too late to save the life of the patient. The consulting surgeon could discover nothing to justify an operation, and in the morning there was not a symptom indicating the necessity for a laparotomy.

Another physician had decided to open the abdomen for appendicitis, but a consulting physician examined the case and diagnosticated intestinal perforation from typhoid fever, with patient in collapse; she died within three hours.

It is needless to multiply cases to show the evils that may result from a mania to report a long series of abdominal sections.

I have several times been called to cases of malignant disease where the surgeon had decided to do a vaginal hysterectomy, but wanted my approval before operating. The disease had extended to the uterine adnexa, and the uterus and other pelvic structures were so matted together that mobility was destroyed, and the uterus could not have been removed without destroying the life of the woman. But granting that the uterus could have been removed and the woman recover from the operation, much of the cancer would have been left, and the operation could not have prolonged life. This is not the first time that I have protested against the abuse of laparotomy, as will be shown by the following extract from a paper read before the Section on Obstetrics and Gynecology, at the May, 1891, meeting of the American Medical Association at Washington:

> There is too much laparotomy done and too many men are doing it; men who know too little about the diagnosis and pathology of abdominal or pelvic diseases, or about the best technique in operating and have few facilities for doing such work. Continuously good laparotomy work cannot be done except by men who largely devote themselves to this department of special surgery, and with such men some cases are operated on where the indications do not justify it. . . . As the experience of an honest surgeon widens, he operates relatively less frequently, and he can recall cases that he does not believe should have been operated on. An honest, intelligent and careful man may, when young in observation and practice, make mistakes in the selection of suitable cases for laparotomy, but this is less frequent than it was a few years ago. It is criminal to do dangerous or capital operations while ignorant of the best methods of doing such work, or for the purpose of adding a little cheap glory to our reputation; or to report cases that apparently recover from the immediate effects of the operation as permanently relieved before the final results can be appreciated. Such men usually have many bad results or deaths that they do not report so promptly, and the profession, or the people, seldom hear much about them.

As I will include in this report a series of selected cases of abdominal section, the time allotted me will not admit of a detailed description of my technique in such work, so I will mainly reserve this for another occasion, and confine my remarks to a few general questions in which all laparotomists are interested.

Chemical germicides, either in solution or on sponges, the hands or instruments, should not be used on healthy peritoneum, or on denuded surfaces where the success of an operation depends on the union of coapted parts by adhesion, for if used strong enough to destroy microörganisms, they will also destroy the surface layer of cellular elements that need to be preserved as the most potent and powerful factors in combating the invasion of pathogenic bacteria. The peritoneum is a peculiar structure, and its single layer of endothelium seems to be endowed with great antimicrobic powers, so that the introduction of pyogenous microbes may cause but little if any disturbance. This fact has been conclusively demonstrated by observation in intra-peritoneal surgery, where cavities of pus, with the streptococcus, or staphylococcus pyogenes, aureus and albus, have ruptured in the peritoneal cavity and caused no peritonitis or septic infection. The cellular elements of healthy tissues are always ready to battle against the introduction of poisonous microbes, but this property is more highly developed in the leucocytes. The experiments of Grawitz, Laruelle and Waterhouse proved that the introduction of pyogenous microbes into a healthy peritoneum was usually harmless unless some irritating substance was present. Laruelle used fecal matter and bile. Pawlowsky found that the chances of peritonitis from the injection from pure cultures were greatly increased by the presence of irritating antiseptic solutions. The chemical germicide will never destroy all the bacteria that may enter the peritoneal cavity from unclean surgery, or from the rupture of a pus cavity, but it will, just as bile and other irritating substances do, deprive the peritoneum of its endothelial layer, thereby leaving an open connective tissue space with but little resisting power against septic invasion; the few or many bacteria left in the peritoneum are given a fertile nidus in which they may multiply rapidly and cause fatal peritonitis. But if perchance, the patient escapes septic infection, local or universal adhesions are formed that cause great suffering and may cause death. This has been positively demonstrated by the experiments of Delbet and Marcel on the action of antiseptics upon the peritoneum, published in the *Annales de Gyn.*, 1891. It is also the observation of experienced laparotomists that secondary operations for peritoneal adhesions are more frequently required in cases where antiseptics were used in contact with the peritoneum. If we do an aseptic operation we do not need antiseptics, and if the operation is not aseptic, antiseptics will not make it aseptic, so that we may lose much and gain nothing. Antiseptics may be used before and after laparotomy, but not during the operation, and if the hands, sponges or instruments have been in a chemical germicide they should be washed in clear water made aseptic by boiling before they are brought in contact with the wound in the abdomen or the peritoneum. Everything used in a laparotomy except catgut and kangaroo tendon may be made aseptic in a Koch's or Arnold's sterilizer, or by boiling; hence there is no necessity for using an irritating and dangerous chemical germicide.

Pozzi does not now use antiseptics after the abdomen has been opened, and Sänger and Veit have abandoned them, while Bantock, Tait and other distinguished laparotomists glory in the fact that they have never used them.

The best immediate and subsequent results in abdominal and pelvic surgery that have been recorded are in the practice of men who do not use antiseptic germicides. My experience and observation teach me that many of the most persistent advocates of antiseptics do not correctly appreciate the practical value of surgical cleanliness, but expect the antiseptic to make all aseptic; and just here lies a great

objection to the general use of chemical germicides, and many women have died of septic infection, or have been maimed for life from peritoneal adhesions because of reliance upon such means. If everything is not made practically clean without the germicide, we cannot do an antiseptic operation by using it. If all abdominal surgeons correctly appreciated the value of, and the best means of accomplishing surgical cleanliness, septic infection following laparotomy would be comparatively infrequent.

As I have said at another time, the spray is of no value, for the excellent results in laparotomy done in crowded amphitheatres show that the danger from atmospheric infection is practically *nil*. Some men who use the spray, Don Quixote-like, while pursuing an imaginary foe, allow the deadly enemy to enter through numerous neglected channels—the hands, sponges, sutures, instruments, etc. Every operator should observe the broad principles that make the foundation of all good surgery, but if he neglects the details he will be disappointed in the results.

I will not detain you with my views of the best means of making and keeping everything aseptic in abdominal and pelvic surgery. I have treated this subject in detail in a paper read at the New York Academy of Medicine, in September, 1891, before the American Association of Obstetricians and Gynecologists, a copy of which has been placed in reach of more than half of the members of the medical profession of this country, and my position is generally known. Since I have practically excluded chemical antiseptics from the operating room in laparotomy and have a specially trained nurse and experienced assistants, my patients seldom have an untoward symptom, and usually make an uninterrupted recovery without elevation of temperature or acceleration of pulse. Most of my recent operations, however, have been done in an elegantly arranged operating room where all the details of an operation may be conveniently made aseptic. This cannot be so easily done in operations in private houses. But no microörganisms may be carried into the peritoneum by the operator, and still the patient may die of septic infection caused by pathological products within the abdomen or pelvis containing pathogenic germs which every precaution known to abdominal surgeons will not remove. Nor is it possible from a physical examination during an operation to form an intelligent idea of the relative degree of virulence of pus found in the abdomen or pelvis. It may be impossible to make a culture from the contents of a large pus tube while the few drops of pus from a salpingitis in the other appendage are swarming with malignant pyogenous microbes. This will, in a degree, explain why some patients apparently have a greater resisting power against septic infection than other patients under what seems to be similar conditions; in the one instance the pus is practically innocuous, in the other it is actively contagious; one person may recover from rupture of a large pus cavity into the peritoneum, another may die from the rupture of a small one.

Bacteriologists in this country and in Europe have recently made frequent examinations to determine the character of the pus in tubes removed by laparotomists. Menge (*Centralblatt für Gynekologie*) examined the contents of the tube in twenty-six cases of salpingitis operated on at Berlin in August Martin's clinic. In *eighteen* cases the contents were absolutely sterile, while in eight cases microörganisms were found. In two the streptococcus pyogenes; in one the staphylococcus pyogenes albus; in one a saprophytic rod that was cultivated upon agar-agar; in one a diplococcus that could be stained by Gram's method; while in but three cases was the gonococcus of Neisser found. In one instance the gonorrhœal pus escaped into the peritoneal cavity and caused no specific peritonitis. Bumm claims that the specific action of the gonococcus is confined to cylinder epithelium, and that it does not invade the peritoneum; and Koch says the question is in doubt. However, we know that gonococci are found in the sac of the knee-joint, which resembles the peritoneum. If examinations were made of the pus from gonorrhœal salpingitis in the early stages, the specific germ would probably be more frequently found, but the gonococcus is a sensitive organism, and its presence will seldom be demonstrated in the abundant pus of the old abscess. In the September (1890) issue of Johns Hopkins' Hospital Reports, Dr. Howard Kelly publishes a case in which Dr. Ghriskey demonstrated the presence of colonies of gonococci in the pus cells. Dr. Kelly says: "In the case in question this observation was made in the tube least affected, which microscopically scarcely seemed to contain any pus. No cocci at all were found in the large tube full of pus."

Orthmann and Westermark found the gonococcus in one case each. Probably there are cases recorded that have escaped notice. Dr. Hunter Robb (the *Johns Hopkins Hospital Bulletin*, March, 1892) reports a case where he removed both uterine appendages. The left tube contained a large quantity of pus, while there was but little pus in the right tube. After a careful bacteriological examination he says:

"Cultures and smear preparations made from the right Fallopian tube and vermiform appendix immediately following the operation were pure cultures of the streptococcus pyogenes. Cultures taken during the operation from the pus which came from the left tube were negative."

Tait believes that the character of the pus in some pelvic abscesses is similar to that found in an ordinary cold abscess. Pathogenic microbes may be destroyed by the cellular elements and secretions of the system, by the presence of bacteria that act antagonistically toward one another, or by an autotoxic secretion that stops or retards their development. The presence of microörganisms in all cases of fatal peritonitis has been proved by the observations and experiments of Laruelle, Bumm, Fränkel and Predohl.

I will conclude this paper by briefly giving my method of suturing the abdominal incision, and reporting a few selected abdominal sections, illustrating some of the conditions for which the operation was done, and the immediate and subsequent results.

In selecting a method of suturing the abdominal wound we should adopt the means that will best prevent stitch or mural abscess and ventral hernia. There are other considerations, but these are the most important. Ventral hernia may occur in any case where the deep fascia is not held together until it unites firmly, and this can best be accomplished by separately suturing it. If we attempt to perfectly coapt it by the interrupted suture introduced through the thickness of the walls the tissue included will be so constricted that there is danger of painful abscesses, and we will not accomplish what is expected. But by suturing the fascia separately the coaptation

and union are perfect without the danger of abscesses from strangulation of tissue. Since I have practiced the following method I prefer it to any other, and the results have been beautiful. I use the kangaroo tendon, and with a straight or curved needle begin at the lower angle of the wound and close the peritoneum with a running stitch. The deep fascia is next closed in the same way, and then the superficial fascia and fat; the suture is now cut and the end buried in the tissue. The skin is united by superficial silkworm gut sutures introduced with a small curved needle. The suturing by the tendon may be done in one minute, and the silkworm gut may be quickly introduced and tied. I prefer the tendon to catgut because it is more easily made aseptic, and will not be absorbed until union is perfect, and I use the silkworm gut because it is one of the most aseptic sutures, as has been recently emphasized by the results of the bacteriological examinations of sutures removed at the Johns Hopkins Hospital. Only one piece of tendon is used in suturing an average abdominal incision. The silkworm gut may be removed on the fifth or sixth day, and the surface will be dry and union perfect. But the buried tendon will hold the surfaces together for two or three weeks before its integrity is so impaired as to destroy its resisting power. I do not now expect to be annoyed by stitch or mural abscesses, or ventral hernia. Dr. Gill Wylie, and a few other operators, suture the fascia separately with catgut, but the sutures tied on the surface over the incision are introduced through all the thickness of the wall. Dr. H. O. Marcy closes the wound with the buried tendon and uses no superficial suture. His technique is beautiful and his results perfect, but the time required to close the abdomen is too long in the practice of the average abdominal surgeon. He has done more to popularize the tendon as a buried suture than any other man, and the results of his work in this line are invaluable.

THE BATTLE WITH GERMS.

Read at the meeting of the Ohio State Medical Society, May 4, 1892.

BY JULIA W. CARPENTER, M.D.,
OF CINCINNATI.

Knowledge of the cause of infectious diseases is considered one of the achievements of the present day. Chemistry and the microscope, wielded by indefatigable energy, have brought to light some of the little things that confound the mighty. These microscopic travelers have been traced in their wanderings through the labyrinths of the human body and their manner of warfare studied.

It has been shown that when these microörganisms enter the body those that are not cast out of the system, are attacked by the white blood corpuscles and other wandering cells called phagocytes. These cells take the parasites into their interior, where they are killed and disintegrated. The destruction of the bacteria in the cells is a *chemical* process. In fatal cases the bacteria poison the cells that engulf them; or when the infection is overwhelming, there is no battle at all, it is simply a surrender at sight.

Again it has been shown that fresh blood, serum, tissue juice and saliva have germicide properties, but not to an unlimited degree. The saliva will destroy the typhoid and cholera bacillus if they are not too numerous. The diphtheria bacillus and pneumococcus are not veiled, but lose their virulence.

The destruction of the bacteria by the fluids of the body is also a chemical process. The first, called the phagocytic theory, and the second called the chemical theory do not conflict. The first is a chemical process inside the cell, the other a chemical process outside the cell, but the fluids of the body contain the secretions of cells.

These are the methods of the destruction of germs in the body, but the reason why the cells win the battle in one case and lose it in another, cannot be demonstrated with our present microscopes and chemical tests. It depends on a yet unknown something, called for convenience vital force, of which some persons have more, some less. The highest degree of vital force which gives resistance to disease is called natural immunity. This is seen when many are exposed to a poison, as small-pox or diphtheria. All do not take the disease, some have the normal vital power that offers the necessary resistance. Living tissue in a healthy state can destroy septic bacteria. If this were not so every one would have tuberculosis, for no one escapes breathing, at some time, air full of the tubercle bacilli. It is when the vitality of the body is lowered that that certain something is wanting that can destroy microörganisms. The vital force of the cells is the protecting power.

To prevent the inroads of infectious diseases there are only two ways, one pertaining to germs and one to the individuals. As to the germs, they must either be destroyed outside the body or forced to keep at a respectful distance. As to individuals they must cultivate the vital power that gives immunity. Can either of these things be done?

As to the first, are there any ways to destroy germs outside of the body, available for every day life for every one? What say the indefatigable workers in the field of bacteriology? They tell us that one of the most powerful destroyers of bacterial life is—*sunshine*. For instance, speaking of one of the most virulent of germs, the bacillus of anthrax, supposed to live in the soil, they say the anthrax spores are so tenacious of life, so resistant, that nothing in the soil can destroy them, only *sunshine on the surface*.

The little tubercle bacillus, a microscopic line, the dreadful scourge, that carries off more than any other one disease, the little rod that calls together the learned from all parts of the earth in great convention, what statements do bacteriologists make about this monarch? The following: "The tubercle bacillus, very tenacious of life, is found alive after being buried long in the earth, or even after exposure to ordinary weather, but is killed after *long exposure to sunlight*." Are the rooms of consumptives flooded with sunlight for the protection of others, or is the sun shut out to save the carpet? The subject of sunshine as a germicide for every day life has not been emphasized, but medicinal germicides have been advertised the world over.

Can vital force be cultivated? Without sunshine and fresh air, never. Sunshine, besides being antagonistic to germs, has a wonderful influence on the body, imparting the deficient vital power by a process as unknown as the vital force itself. The human body as well as the vegetable world utilizes sunlight. The whiteness of the plant grown in the cellar, and the green color of the same thing grown in the light, have their counterparts in human beings. Just what is the influence of sunlight on nutrition and nerve force we have no methods at present of estimating,

but enough is known to induce physicians to warn people against shutting the sunlight out of their homes for the double reason, that it gives vital force to people and takes it away from germs.

Is the warning needed? Sunlight is shut out of every home as if it were the germs themselves. Take a drive through the suburbs of any city, a sunny winter morning when a little sun, a warm hearted visitor, should receive a hearty welcome. Every window toward the sun is closed by shutters, shades and curtains, usually all three. If uncovered at all a square foot is the most. Whether palace or hovel the sun is barred out in all alike. Please notice if you have not already done so.

Plants with infallible instinct turn to the sun, man with fallible reason turns away from it.

Another forgotten requisite to vital power is fresh air. The best way to prove its necessity is to look at the effects of vitiated air. The carbonic acid from the lungs and the emanations from the body soon make the air unfit to breathe. As it gets to this point it causes languor, headache, an oppressed feeling and various uneasy sensations. An eminent physiologist very accurately says: "It is a wonderful fact that the body after a time adapts itself to such vitiated air and that one soon can breathe, without apparent inconvenience, an atmosphere which, when one first entered it, felt intolerable. Such an adaptation, however, can only take place at the expense of a depression of all the vital functions, which must be injurious if long continued or often repeated." The proof of adaptation is well shown by the experiments of Claude Bernard. A sparrow is placed under a bell glass of such a size that it will live for three hours. If, at the end of the second hour (when it would have lived another hour) it be taken out and a fresh healthy sparrow put in, the fresh healthy sparrow will die instantly. The condition of the sparrow, at the end of the first hour, is the state of most persons, and where is the resistance to invading bacteria?

There is a growing dread of air that is most remarkable. People are actually afraid of it. It shows itself on all sides. If a street car is packed, and one, near the door, opens it, it is as quickly closed by another; and until it is actual summer, if one opens a window, all frown and move away as if it were a leper. Steam cars are no better. Returning in the early spring from a neighboring town, though the temperature was 55° F., each ventilator and window was closed and the stove red hot. As no one was nearer than five seats I ventured to open my window. In five minutes the conductor approached saying, "I must shut the window, they are complaining of the air." With one window open in the whole car a draught was not possible. A fish might as well be afraid of water as people of air.

Look at the latest luxury, so-called, in cars, the vestibule train, all closed up so the whole train is like one long car. In the ordinary car there is now and then a puff of fresh air from the door, now it is a puff from the next car no fresher than your own. What is this atmosphere in which one is shut up for twenty-four hours? Was there ever a car filled with only healthy people? The breath from the healthiest is refuse material, and to this is added the breath from some that have catarrh, dyspepsia, imperfect teeth, incipient phthisis, and the breath from various other invalids traveling for health. Some smoke is also mixed with this, as the smoking room being small the door is usually open. Opening one's own window cannot destroy this mixture and inhaling it twenty-four hours puts one's vitality at least as low as that of the sparrow at the end of the first hour, and resistance to the germs inhaled cannot be expected.

People often say they took cold traveling. They had an influenza from the germs they inhaled and could not resist.

What about ventilation at night? The exchange of carbonic acid and oxygen in the lungs is not the same during sleep as when awake. More oxygen is taken in during sleep and stored up for use the next day, but how many give themselves more air at night than in the daytime?

A few months ago there was published in one of our journals a statement from some French physician as to a new treatment for phthisis which had brought about wonderfully good results. The new treatment was simply leaving the windows of the sleeping rooms partly open at night. This is amusing in the light of to-day, but as it is the national custom in France to keep all the windows closed at night for fear, as they say, of sore eyes, it was not so strange that he was amazed at the good effect of fresh air at night.

Physicians are by no means without blame in their example as to air. Many ride in close carriages shut up almost the same in sunshine as in storm. In their assembly rooms one might often suppose they were solving the problem as to how long they could breathe the same air over and over and the discussions still continue rational.

There are some physicians, however, in our city, who have the courage to use out door air as an aid to treatment in some acute diseases, as pneumonia, and have all the windows open. Of course the result is good.

There ought to be a National Department of Health, and one of the chief duties should be to protect people as far as possible from all these so-called pathogenic organisms. And until people have the knowledge to protect themselves, they should be protected by law. For instance, garments that have wiped up the unspeakable infectious dust of the streets should not be allowed in any church, theatre, school or any assembly room. Of course persons have the right to stir up such an atmosphere and breathe it if they wish, but they have no right to subject another to it. Dreadful mistakes are made from lack of knowledge. The law of absolute cleanliness holds good outside of surgery. The results of Listerism are needed in more than one department.

Architects should be taught the laws of health so they will not turn beautiful homes into hospitals. Whether they need this instruction or not, look at one house, which is only a sample of many. There it stands alone in the centre of a large lot, facing the east, so the whole length of the house has the southern exposure so poetically described by novelists. But what is there on this sunny, airy side of the house? All the halls and numerous closets. On the north, where there is no sun, are all the rooms and bay windows. Windows toward the east catch the morning sun except those on the first floor. No ray of sunshine ever enters there. It is barred out by a porch with a roof so wide and slanting so low that the sun never stoops low enough to peep in. We speak of the coffin lid crystals of the triple phosphates; the term might well be applied to this kind

of a porch roof. If the house could be turned around, the north side on the south, it would be a model.

We have a fine government building occupying half a block. There are large windows, large corridors, but most of the work is done in the interior by gaslight.

Architects are not taught that sunlight and fresh air are germicides, and opposed to phthisis, diphtheria, etc., and so they cannot be blamed. In the meantime, however, they go on making the windows smaller and smaller, and the third story of homes almost without the possibility of ventilation.

If the laws of nature cannot be changed, why not follow them? The foundation laws of health are as ignored as if they were yet to be discovered. That sunlight and air are man's best friends one little dreams. The life of to-day is a cultivated one contrary to nature. It brings about a lowered vitality and susceptibility to the so-called pathogenic microorganisms, for germs can not attack actively growing tissues, they can not affect man unless the tissues have been previously injured.

If the normal vital force gives immunity from these infectious diseases, and its lack gives susceptibility, instead of saying some germs are pathogenic to man, would it not be more correct to say, it is *man* that is so often pathogenic and not the germs.

THE ESOTERIC BEAUTY AND UTILITY OF THE MICROSCOPE.

BY EPHRAIM CUTTER, LL.D., M.D.,
OF NEW YORK.

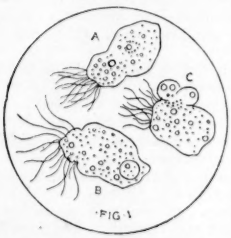

FIGURE 1.—A. Asthmatos Ciliaris, mature form.
B. Asthmatos Ciliaris, with inside young.
C. Asthmatos Ciliaris, mature form, the budding process going on. Patient of E. Cutter.

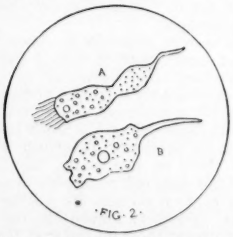

FIGURE 2.—A. Deformed Ciliate Epithelium from Air Passages in La Grippe.
B. Another specimen without Cilia. Patient of E. Cutter.

IV.

ASTHMATOS CILIARIS AND GRIP.

Epidemic influenza, or grip, is not a new disease. To repeat, I am grateful to American microscopy for views of grip which are positive and tangible. One was once accused of jumping to conclusions too quickly and without sufficient investigation, and told that if he had an idea he ought to stick to it, develop it, and not sacrifice himself. Let us learn from critics and take a jump of fifteen years backwards to an observation. Fifteen years is not a too quick jump to make, and must be safe.

June 20, 1877, I was in Cleveland, Ohio, studying the causes of disease with Dr. Salisbury. He had the grip, and showed me, under the microscope, in his excretions from the air passages (*a*), a dead infusorium he called asthmatos, and mentioned in Kent's Infusoria, page 466, and the Micrographic Dictionary, 1883, as a genus of cilio-flagellate infusoria. "*Characters:* free, rounded, with an anterior bundle of cilia and flagelli-form filament. Asthmatos ciliaris, length 1-1200 (Salisbury);" (*b*) a living, lively and mature specimen that died under our sight; (*c*) several young ones which were globar, provided with beautiful cilia, whose motions were as follows: 1. Some rotated on their own axes, because of the graceful waving backwards and forwards of the cilia moving together like flails beat in unison as to time and direction. 2. Some, where the wave motion of the bodies were less than the wave motion of the cilia. 3. Some had a non-synchronous movement of cilia; that is, while one cilium waved to the right, another was waving to the left, and so on. In other words the cilia did not move together, but were independent, and moved asymmetrically.

The cilia were not arranged in straight lines, or rows, side by side, but were planted as trees come up on a conical or rounded hill, or whiskers on the chin.

Size was on an average about that of the oval mucous corpuscles which show the so-called Brunonian movements.

The cilia were as long and longer than the diameter of the globar body. Dr. S. spoke doubtfully of them, and was not sure of them until the microscope revealed a few of them in the field. He said that sometimes the field is full of them in full activity, and so I have found them.

Since this observation, many others have been made and published confirming it. The following additional motions have been observed.

a. A specimen has been seen to turn completely over, so that the cilia faced in the opposite direction, and then to turn back again to their original position.

b. They have been observed to bud.

c. To divide by fissure.

d. To have a parturition of a young one, which moved from one side of the mother to the opposite, and then issued a new being.

e. A bud of about one-quarter the diameter of the mother would pull off, taking with it a filament of the parent substance, so that mother and young were connected as with an umbilical cord.

They would continue to separate more and more, the filament or gubernaculum growing more and more attenuated until it broke.

The part attached to the mother was drawn into it. They separated as if forced apart by some one as candy is pulled by a confectioner.

Prof. Paulus F. Reinsch, of Erlangen, Germany, saw this phenomenon with me, and said it was a new observation in genesis.

f. Besides these, the asthmatos locomote some-

times from one part of the field to another, and in opposite direction to each other. The universal prevalence of grip has made it an easy disease to observe. The best time to collect the forms is the first stages, when the coughing and sneezing are on. Later, it is more difficult to detect the asthmatos, as they seem to penetrate to the deeper air passages, to the maxillary antra, and to the frontal sinuses even, and are more difficult to dislodge. Still, they leave behind irritation after they have relinquished the outer air passages. Usually they are more abundant in the clear, glairy, transparent mucus than in the darker and white excretions.

HOW TO COLLECT.

I use the following modes:

1. Place the specimen of sputum on a slide and spread out in a thin film. Examine under a one-quarter inch objective which has a working distance of one-eighth of an inch at least. I like a large cell, say two inches by five-eighths of an inch. Mine is of brass and glass. Any one can make a cell by heating sealing wax and moulding it into a cylinder about one-eighth of an inch in diameter, and long enough to be laid in the above size on a slide. If, then, this slide is gently heated from below so as to melt on the sealing wax all around, the cell will be complete.

2. If immersion objectives or the clinical microscope are used, a cover is needed, and the extra excretions removed by a bibulant, as cloth or paper. I prefer the light from a good adamantine candle, or oil lamp. Mode one gives the largest field at once and saves time. Higher objectives may be used. I have photographed the asthmatos with the one-sixteenth and the one-seventy-fifth inch objectives, and demonstrated the microphotography to many people.

It is not now denied that their forms exist in grip.

WHAT HAS BEEN SAID TO ME ABOUT THEM.

1. "Pshaw! No such thing as a cause of grip." This was uttered by an old physician — one of the most wealthy people in his city, and made so by his profession. This remark is not worth putting down here, save that he is in the full tide of a large practice, and has to treat the grip without microscopy, and so spoke from no personal observation in this decided way, settling for himself and his patients this question at once. He knew nothing about infusoria, nor, from his own success in reaping the monetary reward of his professional life, could he think it needful for him to know. Useless to argue with such.

2. Others said that the forms called asthmatos were deformed ciliated epithelia. This narrows down the question to asthmatos versus deformed ciliated epithelia. One gentleman showed me a physiology where these forms were figured as deformed epithelia found in grip. Dr. Leidy, in 1879, came out and took the same position, and gave figures of the forms he had observed in the excretions of patients. These statements were enough to satisfy them and those who did not use the microscope, in favor of ciliated epithelia deformed.

3. Some years ago I was asked by an eminent physician to review his work on throat diseases, which is deservedly highly esteemed. "Why don't you put in something about the asthmatos?" "Send me an account and I will do so," was his answer. I sent him a description, with drawings and specimens. He replied that he would publish this account, but not the cuts, as he had taken the specimens and cuts to three eminent microscopists, *none of whom agreed with each other* in their observations, but that one showed him in an infusion of grass under the microscope just such forms as were figured in the cuts, and said that infusions of grass probably had been mixed with the excretions."

I replied, "Give me the name of your savant." He would not, and added that I had no reason to be vexed. I replied, "Your action in rejecting my cuts says louder than in words, 'I do not use them, as infusions of grass were probably mixed with the excretions from the air passages.' Now, to settle this point, please show to the gentleman who made this remark the enclosed list of the names and addresses of eighteen persons who have seen me take excretions from the air passages of patients suffering from grip, and demonstrate the forms I call asthmatos without any admixture of the infusion of grass nor anything else." In this list were the names of my medical teachers, Oliver Wendell Holmes and Dr. H. I. Bowditch. The cuts were inserted.

4. Another gentleman said something about the asthmatos to me publicly which I relate here as a matter of history solely. I was called to see a child 2 years old, said to have lung fever. Face red and countenance expressive of great suffering. Incessantly and noisily coughing and raising; head hot; pulse normal; breathing normal when not coughing. From the pulse and respiration I doubted the pneumonia. Down the upper lip ran considerable thin, acrid, watery mucus from both nares. Some of this I scraped off, and by aid of the clinical microscope at once found it swarming and alive with asthmatos ciliaris. I used an atomized, saturated watery solution of the benzoate of soda. The case recovered sooner than I wished, for I was anxious to study the unusually lively forms. Thinking that this was the way to practice medicine, and innocently anxious that my medical brethren should know about it, I read a paper to them on this case, illustrated with lantern projections. After I got through, a gentleman spoke, and as I was busy with caring for my lantern (I always do this, so as to be sure it is in order for future use), I did not notice what he said until I caught the words: "Dr. Cutter knows nothing about this subject." I then recognized the voice as that of a gentleman I had known to bulldoze another who had read what I thought was a very nice medical paper on the lines of pleuritic effusion, and at whom I was very indignant, because of his palpable injustice and want of professional courtesy to the reader. I made up my mind that if he ever talked to me in that style, I would give him the treatment I thought he merited. To tell the truth, I had forgotten all about this, and had counted only on a courteous, if not warm reception. In an instant it flashed upon me what to do. So I called the gentleman to order, saying that I had come there in good faith, on the principle that if any medical man knows, or thinks he knows, anything new or valuable to relieve suffering and cure disease, he is bound to make it known to his brethren, and so long as he observed the rules of good breeding, he was entitled to a respectful hearing, and hence I would not be insulted by him or any one else. I stood before him

and said: "Tell me if I lie," and that there were other observers than myself, covering several years and thousands of cases. Had he told me this, I was intending to sue him for defamation of character, because he appeared to me to stand athwart means which would cure cases if used. Not to stretch out helping hands to sufferers because of a false, not to say insulting, statement, seems to me worthy of fiends, and unworthy of men whose business it is to mitigate, not prolong suffering. He then took the ground that these forms were ciliated epithelia, and said he had a slide with some that he had taken that day. He said, "Mr. President, I would show them, but I have no microscope." Said I, "Mr. President, I have a microscope which is at the gentleman's service." Said he, addressing me, "Your microscope is not good for anything, and I cannot use it." Said I, "Please let me try for you." I took my clinical microscope with a $\frac{1}{8}$ inch objective, four systems, 180° angular aperture, made by the late Robert B. Tolles, of Boston, whose reputation as maker in Europe (as I found out for myself) is second to none, and found the form the doctor alluded to. I then handed the microscope to him and he made believe that he looked, and said, "Mr. President, I can't see anything."

I replied, "Mr. President, I can, and I can furnish microscopes, but not brains." I could not help saying this, such was my indignation at the obstinacy to being convinced by a man who had characterized the beautiful $\frac{1}{8}$ inch objective of Tolles as good for nothing, when it was one of the best ever made.

After adjournment, I asked the gentleman if he had seen the forms he noted in any other patients? He replied that he had not; so an appointment was made to see cases the next day. I had my cases there, but the gentleman did not appear, because he was too busy.

Why I believe in the Asthmatos, and regard the treatment of grip, based on this belief, as one of the most beneficent and useful *American* uses of the microscope:

a. The asthmatos is not found in ordinary colds. Ciliated epithelia are. Others may, but I have never found human ciliated epithelia in motion on the body in ordinary colds.

b. I was never taught that there were ciliated epithelia deformed. With these exceptions including observations above named, I never was taught that ciliate epithelia resembled the asthmatos. If these forms are deformed epithelia, why should it not have been taught me to prevent mistakes on my part?

c. The asthmatos has been found on the mucous membrane of the conjunctiva of people suffering with grip. If these forms are deformed ciliate epithelia, why have not histologists taught that they are found on the human eyeball?

d. The asthmatos reproduces by budding, cleavage, gubernacular method and parturition from the parent. There is no authority for such reproduction of deformed ciliate epithelia. If there is, I want to know it.

e. The fact that the Philadelphia savants found forms like the asthmatos in infusion of grass, shows a strange habitat for deformed ciliate epithelia human. I am aware of the great vitality of human epithelia in hydrant water, and have often observed them, but never have found ciliate epithelia. I have searched in the hydrant water of about thirty cities and towns and in the canals of the Netherlands for the asthmatos, but never found one I felt sure of until August, 1890, in a canal between Harlem and Leyden, Holland. I have found plenty of free and actively moving ciliated epithelia in the juice that laves the mantles of the common marine soft-shelled clam, along with cilio-flagellate infusoria. I think.

f. The most practical evidence to me of the forms in question, flagellate infusoria and not ciliated epithelia deformed, is their behavior to treatment with quinine, salicin, menthol, the fumes of burning sulphur and nascent chloride of ammonium, to name no more. I have found patients suffering with grip and infested with the active and lively forms in question, and made them inhale the fumes of burning sulphur, and seen them instantly relieved of the bad symptoms. Examining the secretions just after the inhalation and relief, I have found like forms in question, dead and motionless. If deformed ciliated epithelia are thus affected by burning sulphur fumes, for example, it is something novel in medicine, and not taught.

So long as I find that grip patients are relieved and cured by killing and removing what I believe to be the asthmatos, I shall not cease to be grateful to the Netherlanders for inventing the microscope, and while I respect the opinions of those who differ, I shall continue to follow and advise the practice here laid down, as a brilliant gem in the crown of American medicine.

1730 Broadway, New York, April 16, 1892.

V.1
189

THE RELATION OF BACTERIA TO DISEASE.

An Address read before the Illinois State Medical Society at Vandalia, May 19, 1892.

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From the earliest times to our own the mental bias of physicians has been strongly toward philosophizing. This has been true because of the inherent difficulties of the subject matter with which pathology deals. That it is not due to lack of scientific method in early times, is conclusively shown by the fact that modern theories upon the subject are not in accord. And *some* theory is just as necessary for a working basis for the doctor of to-day as it was when "The Genuine Works of Hippocrates" contained all the knowledge which a progressive doctor needed to know. And other things being equal, a physician's success and usefulness may be guaged by the completeness of his theories regarding disease, and the thoroughness with which he carries them out in practice.

The history of the development of bacteriology gives ample evidence that it has followed the common paths of the progress of all human knowledge. It has been marked by brilliant discoveries, boundless enthusiasm, bitter controversies and persevering toil, but it has also been crowned by constant progress, and one by one its problems are reaching solution.

A brief review of the main facts in its history will assist in appreciation of the present status of the subject. Further, by the law of its method, this address is confined to a consideration of general considerations, and must omit technical details. The difficulties of practical work in bacteriology are so great, that constant reference to standard text books is imperative in its prosecution.

There are a few fundamental questions about which all of the discussion has hung from the time of Anthony Van Leewenhock's communication to the Royal Society of London, in 1683, to the recent one of Klebs on *tuberculocidin*.

Van Leewenhock's discoveries raised the question of the existence and forms of bacteria, but the greatest controversies of the science have been in settling the point as to whether bacteria are really the prime factor in diseases. Finally, the science is concerned in determining the manner in which the microörganisms produce the clinical symptoms, through their presence primarily, or secondarily through their products. That is, are the results due to bacteria themselves, or to ptomaines, albumoses, or enzymes.

The communication of Van Leewenhock, referred to, settled the question of the existence of bacteria, and the discovery of the various species has been merely a matter of time and perfection of microscopes. About 200 years after the first announcement of the Amsterdam linen draper, Ferdinand Cohn of Breslau, made a classification which remains substantially unchanged. In this classification morphology is the basis, and cocci, bacilli and spirilli, are the three groups under which all forms are classified. The opportunity which the discovery of bacteria presented for building up theoretical systems of pathology, was not neglected by the physicians of any of the centuries since the primitive lenses of the great Dutchman set the ball rolling. Of these theories that of Plenciz (Vienna, 1762) was the best, both theoretically and practically, since some of his teaching stands to-day.

The sharpest scientific controversies, however, in the history of the science have arisen over the question of the origin of bacteria. The suggestion made by Needham, 1749, of abiogenesis or spontaneous generation, was eagerly taken up and defended. He advanced the theory because fermentation and decomposition occurred in flasks which, with their contents, he had boiled, and as he thought, thoroughly stoppered. Bonnet, of Geneva, suggested that Needham's flasks were not efficiently closed, and later Spallanzoni proved the correctness of the suggestion. Flasks containing test solutions securely stoppered and boiled by him for an hour, remained sterile.

The next claim was that germs generated spontaneously in the air. This was disproven by two investigations. Schultze arranged sterilized solutions in such a manner that air could enter them only after passing through sulphuric acid or caustic potash solutions, and they remained sterile. Tyndall's solutions remained sterile in a glass chamber, the dustless condition of which he demonstrated by passing a beam of light through it. In 1854 Schroeder and Dusch showed that a cotton plug is an efficient germ filter. In 1860 Hoffman, and in 1861 Chevreul and Pasteur, showed that the drop of water of condensation in a doubly bent tube connected with the flask, also prevented the entrance of bacteria. The first suggestion of spores came from Bonnet in 1762, but their demonstration was made by Ferdinand Cohn about a century later. He found that under favorable conditions some bacteria passed into a so-called spore, or resting stage, and that these spores were much more highly resistent than the bacteria from which they sprung. This discovery accomplished two results. It utterly overthrew the doctrine of abiogenesis, and it became the basis for practical work in bacteriology. For example, Kitasato's successful pure culture of the tetanus bacillus.

The first successful attempts to associate special bacteria with special fermentative processes, or with specific diseases, occurred about the middle of the present century. Pasteur discovered the ferments of wine and beer in 1857. In 1849 Pollender, and durthe years from 1850 to 1870, Royer and Davaine established the constant presence of rod-like bodies—anthrax bacilli—in cases of splenic fever. And in 1871, Koch placed their association with that disease as the primary cause beyond question.

At present the work of bacteriologists is chiefly devoted to the discovery of additional specific species of microörganisms, and to the discovery of the manner in which the organisms produce the results associated with their presence and growth.

By a violation of the logical order of this discussion, attention is called at this point to the products of bacterial growth. Physicians have long been familiar with the fact that through the action of vegetable cells upon the protoplasm of the cell plants, certain basic substances are formed, known as alkaloids, which are alkaline in reaction, most of them animæ, and which unite with acids to form salts. Again, when injected under the skin, or administered *per orem* in animals, these substances alone or combined, produce energetic and specific effects upon the end organs of nerves and upon the muscles themselves. Among these substances are atropine, chinchonine, aconitine, strychnine, *et al.*

Now bacteria are simply vegetable cells, and by their action upon the protoplasm of animal cells, they also produce alkaloids, the so-called ptomaines of Selmi, and certain derived albumens known as globulins and albumoses. A third series of substances associated with bacterial growth in the body, are the enzymes, or unorganized ferments, pepsin and trypsin.

To another class of animal alkaloids Gautier has given the name leucomaines, and he claims that they are products of normal tissue metamorphosis in the body .In this opinion he has the support, among others, of Vaughan, of Ann Arbor. Breiger, however, the highest authority on bacterial chemistry, claims that they are really ptomaines formed in the intestine by the action of bacteria. Since their chemistry and physiological action are similar, the point in dispute is as yet of more theoretical than practical importance. A number of the ptomaines and leucomaines are intensely poisonous, as are also the albumoses and enzymes.

At one time the opponents of the germ theory of infectious diseases, urged that the fact that certain symptoms followed the injection of pure cultures of bacteria did not prove that these results were due to the bacteria themselves, because they claimed, other things besides the bacteria might be simultaneously introduced. This angered and amused the zealous bacteriologists, but they have had to yield the point. Much of the controversy and uncertainty which has attended bacterial research, has been due to this failure to differentiate the results of the ptomaines, albumoses, and enzymes, of each specific bacillus. For example, as appears in detail later, the failure of Koch's lymph was due in a measure to this cause. The unreliable nature of the results due to injection of pure cultures is apparent from the following list of factors in inoculation experiments.

In using infected tissue or excreta:

1. The chemical constituents of the tissue itself.
2. The ptomaines.
3. The albumoses and globulins.
4. The enzymes.
5. The leucomaines, if present.
6. Combinations of the above.

In order to make inoculation experiments rigorously scientific, the constituents of the cultures must be used separately, and it must be known what results follow the introduction of

1. The pure culture itself.
2. The filtrate of the same.
3. The special alkaloid present.
4. The albumoses, or globulose.
5. The enzyme.

As yet but relatively little work has been done along these lines, but that which has is yielding hopeful results. This work is the direction from which protective inoculation is to come. Ever since Jenner's discovery of the protective power of vaccine —cow-pox virus—there has been a growing hope that this would be found to be only a special application of a general principle, and that similar substances would be discovered which would stand in analogous relations to at least all infectious diseases.

The enormous difficulty which attends the prosecution of this subject of vaccination, can be better appreciated by an enumeration of the conditions which modify the growth and products of bacteria, viz.:

1. The nature of the nutrient media.
2. The effects of temperature—this is very striking.
3. The state of the bacteria, whether living a parasitic or saprophytic life.
4. The presence of other forms of bacteria, e.g., of the bacillus of blue pus in anthrax cultures.

A number of theories have been advanced to account for the facts presented in preventive vaccination. Of these the one most in accord with the known facts is, that of "the development of specific powers of resistance in the cells of the body to resist specific bacterial activities."

A very striking confirmation of this theory is presented by the history of the discovery of preventive inoculation against anthrax, and as it is typical of similar work in other diseases it is given here at some length.

In June, 1880, Greenfield announced his discovery that injections of the 12th generation of pure cultures of anthrax bacilli produced no symptoms, and injections of earlier cultures in the series indicated progressive loss of virulence. In July, 1880, Toussaint reported an anthrax vaccine, and that its effect was modified by the temperature, to which the blood of the animal dead of anthrax was heated. Pasteur, and later Chauveau, working on Toussaint's plan, elaborated a system by means of which protective virus may be rapidly prepared in large quantity. It was found that at suitable temperatures the attenuated bacilli, as they are called, formed spores, and that these spores communicated their attenuated properties to the bacilli, which were cultivated from them. It thus became an easy matter to preserve the vaccinal material. In these inoculations, several injections are made corresponding to the pure cultures of the twenty-fourth and twelfth days, and intervals of twelve days must elapse between them, giving time for the development of the specific power of resistence.

Of equal interest is the discovery that the blood of some animals dead of anthrax is protective for others. For instance, the mouse blood is thus protective for sheep (Klein).

The observation of Chauveau, that lambs born of sheep affected with anthrax are immune to the disease, led up to the conclusion that as bacilli can't pass the placenta, the protective agent must be soluble. Hankin has concluded that this is an albumose. Of this albumose doses of one-five millionth of body weight kills rabbits, and doses of one ten-millionth renders rabbits immune to virulent anthrax, but again an interval must elapse between the protective injection and that of the virulent virus. This indicates, as Woodhead suggests, that the virulent and the protective principles are the same. This again is strongly confirmed by what is known concerning habituation to many vegetable alkaloids. Woodhead suggests that this acquired power of resistance may lie dormant for a long period, to be exercised only on specific occasion. An analysis of the so-called preliminary report of Professor Klebs upon tuberculocidin, is appropriate in this connection. This is a report upon treatment of about 100 cases of tuberculosis, and in 75 of them time enough had elapsed for a report to be made upon them. Most of the cases were unequivocal ones of pulmonary tuberculosis. Klebs reports in substance as follows: The substance tuberculocidin is an albumose extracted from Koch's tuberculin. Its judicious employment is not followed by febrile reaction, but large doses may cause such reaction. Its judicious employment is followed by a disappearance of hectic fever. In susceptible animals, especially guinea pigs, its use prior to tuberculous inoculation retards the development of the tubercular process. It can be demonstrated anatomically that treatment by tuberculocidin is followed by involution and dissolution of tuberculous tissue, which occurs especially in the form of an exudation in the diseased structure. Necrosis does not occur, and there is no risk of establishing miliary tuberculosis. The results are better and more rapid the earlier treatment is begun. Hectic fever is not a contra-indication. In man 2 milligrams may be tentatively given, and if followed by no considerable elevation of temperature, the dose may be rapidly increased to a decigram or a decigram and one-half. The injections may be given daily for a month, and then resumed or not according to indications. The results reported are as follows, viz.:

Of the 75 cases, 14 were cured, 45 improved, 14 unimproved, and 2 died. In some cases the conjoined use of other measures, such as hyper-nutrition, serotherapy, rest-cure, drugs, may be indicated to improve nutrition. Unpleasant results were not observed in cases of laryngeal tuberculosis. Finally, the treatment is not incompatible with surgical interference.

A comparison of this report with the facts reported in this address, in a fragmentary way, concerning the discovery of an anthrax vaccinal fluid, shows very clearly that the investigation is made along the proper lines. It gives great encouragement to hope that discoveries of inestimable benefit to humanity may yet come from treatment of tuberculosis with a product of a pure culture of that bacillus. It shows also in a striking way, that the forced premature an-

V.1
189

nouncement of Koch's discoveries, was a lamentable misfortune. The length of this address already reached compels a simple reference to the present state of information concerning the other infectious diseases.

It is conceded that the bacillus of diphtheria of Lœffler is the cause of that disease. Failures to find it have arisen from a mistake in diagnosis, or lack of skill in technique, or failure to search for it in the proper position. The practical suggestions are made, that as it may develop in cases of simple pharyngitis, and may be found in the mouth days after the malady is cured, great care in local antiseptic measures is indicated in all cases of pharyngitis.

Special interest is aroused concerning tetanus, from the fact of Kitasato's success in making pure cultures of the bacillus and placing it among bacillary diseases beyond question; the conclusions of Bosaud are that almost all soil contains the bacillus tetanus, and that its presence depends upon defective drainage, hygienic conditions and degree of cultivation of the soil.

In regard to hydrophobia two things are to be said; one, that the best judges believe it due to one or more microörganisms not demonstrated, the other that Pasteur's protective inoculations do protect under favorable conditions.

Klein's review of Koch's cholera report evidently shows Koch mistaken in claiming the comma-bacillus always present in cholera, and establishes the claim that this bacillus is both found in other cases and has not been demonstrated.

The Cause of Cholera.—Woodhead reviews the ground carefully in a most judicious manner, and concludes that it is extremely probable that the comma-bacillus is the cause of cholera.

It is practically conceded that typhoid fever is due to the presence and growth of the bacillus of Eberth and Klebs. No progress has been made in preventive inoculation. It grows in water and more freely in milk.

The ray fungus is the accepted cause of actinomycosis, and specific bacilli are claimed for syphilis, leprosy and glanders, the remaining members of the infective tumors, so-called, the class in which tuberculosis belongs.

The relation of bacteria to wound infection, and to puerperal fever, is considered so firmly established, that a mere repetition of the surgical aphorism, that "he who has suppuration in plastic surgery is either a poor or a careless surgeon," is sufficient in this connection. The amount of work which has been done, and the literature which represents it, are very large. It is the direction in which at present the greatest hope lies for progress in preventive medicine. This is the appropriate time for oratorical pyrotechnics in summing up the benefits, but you are spared more than a mere mention of the names of those to whom the greatest debt of gratitude is due. There names are Semmelweiss, Cohn, Pasteur, Lister and Koch.

POST PARTUM HÆMORRHAGE.

Read before the Milwaukee Medical Society, May 10, 1892.

BY S. W. FRENCH, M.D.,
OF MILWAUKEE, WIS.

Perhaps I should apologize to the society for bringing before them a subject which at first sight seems so simple; but post partem hæmorrhage does not come under our hands, fortunately, very often, but when we do encounter it, it is a condition that needs immediate attention, and no delaying or expectant plan whatsoever. I therefore bring up the subject more for discussion than for any intrinsic value that the paper may have to the society. It has been my fortune during a practice of thirteen years in this city to meet with but few cases of post partem hæmorrhage. Of course we often meet with cases that are of a slight character, which after a thorough massage of the uterus, or a good free injection of hot water, stop within a short time. But I refer to cases where the hæmorrhage is particularly severe. The only really serious case of post partem hæmorrhage that I ever had, occurred in my practice within the last month. I say serious, because it was at least eight hours after delivery before I felt that my patient was in a safe condition. The delivery was simple. It was her second child. The labor was very light indeed, and the expulsion was entailed with but little difficulty, although there was some slight laceration of the perineum, enough, however, in my belief, to put in a few sutures. She had had no anæsthetic and it was therefore a little difficult to bring the two parts in apposition. After the birth the uterus seemed to have contracted well, and the placenta was delivered. I thought things were then in a safe condition, and in order to dam back a little flow that was taking place I put a small tampon of cotton into the vagina. I then introduced my sutures, and after considerable difficulty in the case, I finished the operation. The cotton was extracted and the pulse examined, but instead of finding it reduced, I found it ranged above 120. I immediately felt for the uterus and found the fundus very near to the epigastrium. I then began massage, and I think I squeezed out in the vicinity of about two quarts of clots. The woman complained a great deal of faintness, but soon as I let go of the uterus, away it bulged up again to the self-same locality as it was before, and by continuous massage again I expressed out the same amount of clots; and it began to be a question in my mind as to how long this thing was going on. I suddenly remembered having read in a journal some few weeks before of perhaps a similar condition, in which the physician did exactly the same thing as I had done, but to the extent that he attempted to keep the uterus down. The consequence was that in keeping it down, however, there was still a considerable hæmorrhage, and eventually the patient died. He drew the conclusion that it would have been better if the uterus had been left as it was and the clots had not been expressed. This suddenly came to mind and I resolved to act upon it; and the third time when the uterus bulged up above the umbilicus, I concluded to let the thing alone and not try to express it. However, I did give a teaspoonful of ergot and some whiskey. The pulse, however, kept up above 120, and was at times intermittent. After that there seemed to be no active hæmorrhage. The woman became collapsed. All of this happened at 9 o'clock in the morning. At about between 11 and 12 I thought I detected some change for the better, and left the case to see my other patients; but I had not been absent more than three quarters of an hour before I was telephoned for to come immediately, as the patient had fainted. But as usual in those cases, when I arrived, I found that the patient had recovered from the faint, but that the pulse was still in a very uncertain and irregular condition. I

then gave the patient $\frac{1}{10}$ grain hypodermically, of strychnia, followed by $\frac{1}{120}$ of atropia. I also gave hypodermically a number of injections of whiskey. This was at 2 o'clock, and by 5 the pulse had assumed a normal beat. She went on to convalescence, but it was somewhat retarded on account of the extreme anæmia that was present. In this case I used a hot water injection, and it was the first time in my practice in which hot water did not have the effect to produce a good, firm contraction of the uterus. We know there are many things that have the power of contracting the uterus. We know that there are some who believe entirely in the use of vinegar passed into the uterus on a swab. We know that the same effect is sometimes produced by squeezing a lemon into the cavity of the uterus. We know that there are some who believe entirely in the use of the fluid extract of ergot, or in ergotine injected hypodermically. We know that there are others who believe entirely in the use of hot water. But I think that the method that I pursued in this case is a method that is not generally laid down in text books. I think that the general rule laid down in text books is to clear the uterus and keep it well contracted down. Under the condition existing in my case it was impossible to keep that uterus contracted down, and it flashed through my mind that the very best way to stop that hæmorrhage was to bring about the condition of things that nature herself was attempting to do, and that was to produce a large clot in the uterus, and by the presence of that large clot a contraction would take place. I will say this, that the contraction was slow, that it was not until the next day at noon that the uterus was down in the condition that you would have wished to have found it after delivery.

Post partum hæmorrhage necessitates not only a careful but also a rapid survey of the conditions. The question is what is the cause of post partum hæmorrhage, or especially what is the cause of the post partum hæmorrhage in your own individual case. It is a question that I think you cannot always answer, because if you could answer immediately, you would then probably be better able to select your remedy for stopping it. It more often comes like a thief in the night and takes you entirely off your guard. Now, in respect to this woman, she was the last person that you would ever expect a post partum hæmorrhage in. The labor had been unusually rapid, the contraction of the uterus had been good during the whole labor. There was no delay, the blood clotted, which does not always occur. I think it has been brought up by some authors that in these severe post partum hæmorrhages the blood does not always clot. I think it was fortunate in this case, that the blood did clot, and that that clot in the uterus did act as a tampon, so to speak, to close up the uterine sinuses. That word, tampon, brings to mind that it has been considered a good plan in severe post partum hæmorrhage, where hasty means are used, in the way of hot water and vinegar, and the hæmorrhage seems to keep up, to tampon the whole uterus with antiseptic gauze, and in other words attempt to bring about a clot by this self-same pressure. Of course, the use of the gauze, being introduced into a freshly parturiant uterus in that way, is a method attended with a great deal of danger, especially of producing sepsis. Another point that came to my mind was that if you did not produce the sepsis, you might produce an absorption of your antiseptic, if you used an antiseptic gauze. If a sublimate gauze was introduced into a cavity of the uterus with a freshly denuded surface, it might have the effect of producing sublimate poisoning. The idea is to pack the uterus firmly, as if you were going to tampon the vagina. The matter of post partum hæmorrhage is a serious thing and requires the most rapid and heroic treatment possible, and it is a little difficult sometimes to select the most æsthetic means at your hands, and possibly oftentimes difficult to select a method that would be free of danger in itself, more particularly a perfectly septic one.

DISCUSSION.

Dr. W. H. Washburn: There are two classes of patients in whom we are most apt to have post partum hæmorrhage of a serious character. First, those cases in which labor is unusually rapid and precipitate, and second, those in which the labor is protracted and difficult. In the first case the uterus seems to be, as it were, paralyzed by its heroic efforts to empty itself, and in the second case the hæmorrhage is caused by prolonged efforts in the same direction. The case that Dr. French has detailed seems to be one of those that belong to the first class, where the uterus is paralyzed by a sudden and great effort. So far as I am individually concerned, I should dislike very much to leave a patient with the uterus dilated and filled with clotted blood; I could not feel safe for the future of the patient, and it does not seem to me as though that is very good treatment. To be sure, the uterus fills up with a clot, but that does not prevent hæmorrhage from taking place from the uterine sinuses, and I should think it would be a precarious thing to do. I have had one case of this kind where hæmorrhage occurred in a woman in which the labor was extremely rapid. In fact, the child was born before my arrival, and the woman was in a condition of syncope from loss of blood when I reached the house, and everything around about was perfectly deluged with blood. In that case I remember very distinctly that she had had a previous experience of the same kind, and her husband when he engaged me to attend her, told me the circumstances of the case. In that case I remained with the woman all night. I gave her stimulants immediately on arrival, and succeeded in emptying the uterus partly by pressure and partly by introducing the hand into the uterus and breaking up the clots. I kept my hands on the uterus all night. I stayed there from nine o'clock at night until daylight next morning, and that was in the winter. The woman recovered rapidly.

Another case occurred after a prolonged and difficult labor in which instruments were used. I was present as consulting physician and soon after the child was born and while I was in the kitchen with the child attempting to resuscitate it, the physician who was in attendance called me, and he was so frightened that he could not tell me what he wanted me for. When I got into the room the perspiration was dropping off his forehead. I never saw such a picture of terror; and the woman exclaimed, "For God's sake, Dr. Washburn, don't let me bleed to death;" and certainly she would have bled to death in a very few minutes, for when I turned back the bed clothes there was a steam of blood coming from her as large as my two fingers. I at once introduced my left hand into the uterus and made pressure over the abdominal walls with the right hand, and got her husband to go out and get a piece of ice, which I introduced into the uterine cavity. The irritation of my hand in the uterus caused strong contraction, and immediately after the ice was introduced the hæmorrhage ceased, and did not recur. The woman made a good recovery.

Of course there are some cases that resist all kinds of treatment. As to the injection into the uterine cavity of such substances as perchloride of iron and any substance that causes such a firm clot as that, I should not feel satisfied to try them myself. I think that in the majority of cases the introduction of the hand into the uterus, massage over the abdomen, the introduction of ice into the uterus, or hot water injections, which at the present time perhaps are more preferable and least liable to be followed by septic trouble, would be the most appropriate treatment, and treatment which would be successful in the largest number of cases.

Dr. E. Copeland: I would agree with Dr. Washburn as

regards the use of substances which cause such a firm clot as perchloride of iron would. I would not feel comfortable or satisfied to adopt such a procedure. I certainly believe in the hot water injections in a great number of cases, if not all, using also strong pressure on the uterus of the patient, continued for hours if necessary, which one physician cannot do if it is necessary to keep it up for any great length of time. A man's hands will certainly tire out and he cannot do that and must call help; but those are very rare cases; I never met but one case and in that case pressure was kept up for several hours. I think in the great majority of cases of post partum hæmorrhages, and they are not very common, hot water injections constantly kept up for a long time if necessary, will control the hæmorrhage. So far as the introduction of vinegar, lemon juice and things of that kind into the uterus is concerned, I would not think of it for a moment.

Dr. Puls: Post partum hæmorrhage is an accident which happens not so very seldom after all. I remember of having had a number of cases. Of course the causes differ, but in most cases the hæmorrhage is due to atony of the uterus, and simple massage and hot water injections will suffice generally to stop the hæmorrhage. Of course, if you have a case of retention of parts of the placenta, the only course is to remove that part of the placenta to stop the hæmorrhage. Another source of the hæmorrhage is tearing of the cervix or perineum which must not be overlooked; if it cannot be remedied by sutures, the tampon will probably be the only way; a hot water douche would not stop the hæmorrhage. Kuestner lately reported a case of post partum hæmorrhage due to aneurysmatic changes of the artery and also to arterio-sclerosis as being a cause of hæmorrhage. The blood would not clot. Now, in most of these cases, wherever we have a rent of the cervix, or where we have no clotting of the blood in the uterus to stop the hæmorrhage, it is natural to tampon the uterus; and if Dr. French succeeded in his case in saving the patient, it was due to the clots. As Dr. Washburn well remarked, by introducing his hand into the uterus he induced a contraction of it to take place, and by applying the ice he got firm contraction. I do not advise the use of ice, but I advise the use of iodoform gauze to pack the uterus. It is a method adopted by Duehrssen about three years ago, and since then probably two hundred cases have been reported altogether treated in that way, with no case of septicæmia resulting. Nor has any case of iodoform poisoning followed. In my practice I have used that method probably three or four times with no septicæmia following and without any fever. The best way if you have no iodoform gauze on hand, is to take ordinary cheese cloth prepared in carbolic solution and apply that. I remember a case only two months ago where the blood came oozing out of the uterus as thick as one finger, and I felt that the woman was dying right under my hands. It was a very rapid delivery; I had nothing at all to introduce into the uterus except my hand, and I called for the basin in which I had the cheese cloth ready, and I took one of those cloths and packed it into the uterus and the hæmorrhage stopped, and I extracted the cloth the next day. I certainly would advise this method in cases of natural birth or after an abortion, not waiting to employ ergot.

Dr. Burgess: When a hæmorrhage occurs anywhere, when it has been of sufficient extent, the patient faints. In that condition the energy of the heart relaxes, and the treatment followed by the laity as long as whiskey has been known, is to pour in whiskey and other stimulants to start the heart up to pump more blood out. It struck me when Dr. French spoke of using whiskey in that case, that it was not good treatment for the reason that you only stimulate the heart to greater exertion, and perhaps, in that way increase the hæmorrhage. If a person faints it does no harm, but does good. Why not? It is the exact condition you want to bring about.

In regard to tamponing the uterus, that may be well enough under certain conditions in proper hands; but I think if you set everybody who attends to midwifery cases to tamponing the uterus to stop hæmorrhage, he will do it with his fingers and it will not be half done, and if he uses instruments he will be very likely to stick them through the fundus of the uterus occasionally. It is a valuable measure perhaps, but must be used with circumspection.

Dr. Shimonek: I have had quite a number of cases in my practice. I have always succeeded very well in stopping hæmorrhage by massage, and stimulation of the uterus internally by the hand. I had one severe case among those, that very nearly bled to death, a case in the country that I was called in to see. The woman finally recovered. I found the uterus filled. I expressed the clots, contraction took place and the woman recovered. But I certainly should not advise the treatment proposed by Dr. French in regard to allowing the clots to remain in the uterus. I do not think that is very good treatment. I should not rely upon it. I do not know what effect the doctor got from the injection of strychnia and atropine, but it seems to me that it would be likely to produce more serious hæmorrhage from increasing the circulation. As soon as I can I always inject ergotin hypodermically.

Dr. French: In respect to the injection of strychnine and atropine, that was some hours after the hæmorrhage had ceased, and also the use of the whiskey was at the same time. This woman was in a state of collapse, and it was a great question as to whether she was going to pull through from one minute to another. Her extremities were cold. She was ice cold all over, and although the hæmorrhage had stopped, still with the pulse missing a beat about once every third beat, and when I could not tell whether the pulse was in her wrist or in my fingers, it seemed to me that it was necessary to use some stimulants to keep the action of the heart up. I readily agree with Dr. Burgess in the matter of the use of stimulants under the fainting condition where the hæmorrhage is in its active period; but there is another point to be considered in that respect; that although the whiskey may produce an increased action of the circulation, there comes a question as to whether it will not also stimulate the worn out condition of the uterine muscles. I well remember an incident related by old Dr. Buckingham, the professor of obstetrics, where he gave a woman ten teaspoonfuls of laudanum and produced a contraction of the uterus immediately, or within a very short time. I would like to ask Dr. Puls how long he would keep the gauze in?

Dr. Puls: Twenty-four hours, if necessary.

Dr. French: As I say, I see that the gentlemen would not agree with me in this method of treating this case. As I said in my paper, it was directly contrary to rules I had followed in other cases, but it seemed to me that this case was one that it seemed necessary to treat in this way if it would not yield to other methods of treatment. Dr. Copeland has spoken about sending for assistance. When you get caught in a case of this kind, unless assistance is next door or around the corner, it is pretty difficult to get the assistance there to help you.

THE INFLUENCE OF BODILY EXERCISES UPON LENGTH OF LIFE.

Read at the Annual Meeting of the Association for the Advancement of Physical Education, April 12, 1892.

BY J. MADISON TAYLOR, A.M., M.D.,
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It is not possible to estimate statistically just how much length of days is enhanced by physical exercises, but it is feasible to establish two propositions: (1) That judicious activities of the body tend to maintain and increase its efficiency, and (2) That the hurtful effects of violent athletic competitions are popularly overrated.

It would be most agreeable to me to consider the first of these, and drawing from history and experience, illustrate amply what few will be disposed to deny. Concerning the second there may be differences of opinion, and here it is well to apply the test of carefully marshalled facts and suffer inferences to evolve themselves. I hope to escape the rôle of advocate, but propose reviewing such meagre data as I have been able as yet to collect, and deduce therefrom only warrantable conclusions. My study so far is most imperfect, but my hope is to elicit discussion and comment so that the truth may come ultimately forth. Within the coming year I shall hope for much light and added knowledge. I have reason to expect large additions to the data yet collected, and these may have a value of which you shall judge.[1]

[1] Dr. Taylor will be gratified for any information connected with this subject.

Against the growing interest in athletic matters there are constantly urged objections to the effect that many perfectly healthy young men are injured beyond repair by strains and shocks to vital organs had in the course of training or competitive sports. Even among those who avow much confidence in the value of physicial exercise, yet many declare the pity of it, because such havoc is wrought thereby. Instances are cited, rather vaguely 'tis true, of fine fellows utterly wrecked by contests on land or water, lives cut short by overtasks at so-called sports.

If these accusations are soundly based, let us then, who should understand the kinds and degrees of their perils, be quick and persistent to sound warning notes. We, of the medical profession, are endowed with the grave responsibility of defining and pointing out dangers and urgently insisting on their avoidance here and elsewhere. In this direction lies our greatest privilege and duty. Insidious evils lie about our feet perpetually, toxines lurk in our very food and air and water. Mayhap certain of these are only relatively hurtful, but at least, it behooves us to teach youth how to avoid disease and attain to vigorous age; and one of the most valuable measures is to train the body to grow in best proportions. During this process of training the thrilling joy of sports and competitions naturally comes in to hurry and overcolor our judgment. The special inquiry as to what hurts may follow in the wake of these is only secondary to the first need of direction how best to train.

As showing how far even the best and wisest of medical teachers can err in opinion, let me cite as typical of what many say, the assertion of Dr. Benj. Ward Richardson, than whom few men stand higher, and deservedly, in the estimation of medical thinkers:

"I can scarcely overrate the dangers of these fierce competitive exercises which the world in general seems determined to applaud. The state of perfection arrived at is at best artificial and sustainable but for a brief period. The mode of life for perfection is itself incompatible beyond a limited time with the ordinary requirements and necessities of life. And when the artificial system of training ceases, the involuntary muscles, the heart especially, remain in strength out of all due proportion greater than the rest of the active moving parts of the organism." He goes on to say: "I venture to affirm there is not in England a trained professional athlete of the age of thirty-five who has been ten years at his calling who is not disabled."

Now this authoritative statement has swayed the judgment of thousands of thinking people, so powerful are *ex cathedra dicta*; and yet on the face of it, it is too over-sweepingly denunciative to be good argument. I have had these views on the damagement of the involuntary muscles quoted to me again and again, and knew not whence they came, till at last this vigorous passage caught my attention. Such states are indeed possible and from such causes do they come, in the laborious ranks of iron workers and those who put forth in long days excessive and continued muscular exertion. In this country we have not had many years of systematized amateur athletics from the records of which to judge. They began about 1868, and only slowly grew in scope.

It is beyond measure difficult to get at the facts relative to the present state of even these whose addresses I have been able to obtain, and the mere names are troublesome to get from college and other registers. Systematized records should be kept on the subject in the interest of vital statistics in all organizations even moderately equipped.

Among professional athletes the heaviest strains must come, as upon the output of most concentrated force alone comes to them honest reward. I have collected the brief histories of a score of these men now living, which at least illustrate how vigorous and sound such men may be, even long after the age limit which Dr. Richardson has chosen to put for them. To those names I can add many, and hope yet to collect more. It may be safely affirmed, however, in conclusion, that the judicious pursuit of bodily exercises either in the line of ordinary avocation, special duties or sport, tends greatly to maintain and enhance the vigor of both body and mind. Those who practice these steadily through life enjoy the best promise of adding to their years and usefulness as citizens. The vital powers of those who omit these activities through choice or compulsion are not so efficient, and to such the accidents of changed circumstances from their simple routine to arduous exertions are far less well endured.

Finally, the hurtfulness of severe muscular exertions short of profound exhaustion are not shown to be otherwise than temporary and recoverable; and lastly, upon investigation, dangers to internal organs and vital centres are comparatively rare. In short, I present brief histories of a few old athletes, now in good condition, with apologies to these gentlemen if by so doing I offend, though it seems to me they have every reason to be proud and thankful to the good power who equipped them so nobly; and further in the care which they have undoubtedly exercised to maintain this so well. My long-tried and valued friend, Professor George Goldie, sometime of Princeton College and now of New York, has given me these:

W. W., age 74; height, 5 feet 9 inches; weight 170 pounds. Rowed in sixty boat races between the years '39 and '60 when they rowed in Whitehall boats, taught gymnastics at the Y. M. C. A. until two years ago; now in business in New York, in perfect health; would pass for a well preserved man of sixty; lived a careful life always.

E. S., bareback rider and tumbler; age, 77; height 5 feet 5 inches; weight about 130 pounds. Retired from the circus in 1868 at the age of 56; was as active then as he had been at 30. Owns a quarry and lives on a farm in New Jersey; was living and in perfect health last winter. Not having heard of his death, presume he is still living. Lived until he was 56 the same as most circus men live, steady in his habits, worked very hard, and naturally could not be very careful in his eating, and often had a short allowance of sleep.

Professor V. S., age 70; height, 5 feet 7½ inches; weight, 140 pounds; taught boxing all his life. Is still teaching as efficiently as ever; his school is in New York; lived the same as the average man does.

W. W., age 58; height, 5 feet 8 inches; weight 150 pounds; still teaching gymnastics in his own gymnasium; in perfect health; lives as the average business man does.

Professor A., age 57; teaching gymnastics in Brooklyn, New York; height, 5 feet 9 inches; weight, 180 pounds; in perfect health, a careful liver.

Donald Dinnie, 58 years old; height, 6 feet 1 inch;

weight, 218 pounds; an all round athlete, is still wrestling, lifting and throwing weights; comparatively temperate in eating and drinking. I heard a year ago from a friend who saw him, that he was in good health; he is living in Australia.

N. A., 59 years old; height, 5 feet 11 inches; weight when 35 years of age, 190 pounds; an all round circus performer; retired seven or eight years ago; living in Worcester, Mass. The last time I heard from him he was in good health; lived a very irregular life.

There are dozens of old circus men over 50 years old living in retirement all over the country who are in good health. Most of them retire at that age; they are then too old to learn new feats, and as the business is continually progressing, young men take their places. As far as their general health goes, it is better than the average man's. Ord, whom I remember in my schoolboy days in Scotland, was 70 years old the last time I saw him perform. From his actions you would have taken him to be a young man.

Blondin, who must be over 60, is still in good health.

William, George, Alfred and Edward Hanlon, the best (in my opinion) all round gymnasts and acrobats that have been in this country, range from 50 to 60 years.

George Grassick, James Stewart, Laurie Robertson, men getting well on to 70, were well known Caledonian athletes forty years ago; they are all in good health.

Professor George Goldie, aged 52; height, 5 feet 8½ inches; weight, naked, 160; just as good a gymnast and acrobat as ever; for seven months of the year works longer hours and harder than he ever did; although has had some very severe falls, they have not affected his general health; today his health is perfect in every way; has always lived very temperately. Subject in his managing capacities to numberless severe mental strains, and worries this superadding to his physical wear and tear.

The Ward Brothers, professional oarsmen, are living and in good health; the youngest of them must be over 50.

Amateur athletics started in this country in '68, so of course there can't be any very old men among them. It is very hard to follow the lives of amateurs, as they give athletics up after a few years.

The most notable examples of amateurs are W. B. Curtis, age 55; height, 5 feet 9½; weight, 175; in excellent health, though he is confined to an office all day. In '68 I saw him lift 3,230 pounds in harness, curl and put up easily two 100 pound bells, run 100 yards in 10⅘ seconds. For three or four years he, along with Yates, held the double scull championship; when over 40 years of age he held the championship at hammer and 56 pounds weight throwing. Today he thinks nothing of taking a 40 mile tramp, making four miles an hour all through the walk; very temperate in his habits.

H. E., aged 53; height, 6 feet; weight, 210 pounds; was 100 yards runner, the best in his day; shot putter, weight lifter, heavy weight amateur champion boxer; could today, in my opinion, beat any amateur boxer in the country; his spare time now he devotes to bicycle riding, rowing, swimming, skating, etc. His wife accompanies him in all his excursions; she can hold her own with all these with the best men in the country, I don't mean at racing, but long distances that require endurance; she is well on in middle life. B., is in business in New York, in perfect health; his mode of living is the same as the average business man's; athletics he has followed only as a recreation.

I add to these the following note from a recent copy of the *London Lancet:*

Major Knox Holmes, a veteran cyclist of England in his 83 year, one of a tandem military bicycling team on a trip of 100 miles in 10 hours 5 minutes, came in ahead of the rest. In twelve weeks under training in a striking manner "developed muscle" in external and internal vasti and rectus muscles. This refutes physiological doctrine that muscle is not newly developed after three score and ten.

I myself took sparring lessons from Mr. Thomas Barrett at the age of seventy-two, a famous all round athlete and prize fighter, and withal a charming person. He then could hold his own against most comers, and with us youngsters could play as with children. I lastly give, with his permission, a brief outline of the life of that marvelously vigorous gentleman, Mr. Wm. B. Curtis, and esteem it a great privilege to be allowed to do so.

SKETCH OF THE LIFE OF WILLIAM B. CURTIS.

William B. Curtis stands prominent in American athletics to a degree which is entirely unique. His athletic history is in itself almost a liberal education in such forms of physical feats as are performed by what is technically known as a heavy weight athlete. Added to this are some remarkable records of lighter kinds. He has been so good as to put into my hands a bare outline of his history, to which I have been able to add such comments as seem to me only just. His own modesty forbids him to do more than give me the actual records of feats which today stand unbroken, many of them scarcely approached. His best performances were:

Running	50 yards	5¾	Seconds
Running	60 "	6½	"
Running	75 "	8	"
Running	100 "	10	"
Running	220 "	23	"
Running	440 "	51½	"
Walking 1 mile,	8 Minutes	51	"
120 yard hurdle race		19	"
Skating, 1 mile,	3 "	18	"
Swimming 100 yards,	1 "	40	"
Swimming 200 "	3 "	39	"
Rowing, single sculls,	1 mile	6 " 49	"
Rowing, single sculls,	2 "	13 " 57	"
Rowing, single sculls,	3 "	23 " 13	"
Rowing, double sculls,	1 "	6 " 9	"
Rowing, double sculls,	2 "	12 " 23	"
Rowing, pair-oared	3 "	22 " 48	"
Rowing, four-oared	3 "	18 " 18	"
Rowing, six-oared	1 "	5 " 38	"
Running long jump,	19 feet	4	inches
Running high jump,	5 "	1 "	
Throwing hammer,	90 "		
Throwing 56 pound weight	24 "		
Putting up one dumb-bell,	168		pounds
Putting up two "	Each 100		"
Lifting with hands alone	1323		"
Lifting with harness	3239		"

Mr. Curtis tells me that his father was a poor New England farmer's boy. The son worked upon the farm in various capacities until the age of 24. He then, alternately laboring and studying, worked his way through Middlebury college and Princeton Seminary, then became a Home Missionary, and finally President of Knox College, Galesburg, Ill. His

mother was a New England farmer's daughter, accustomed from childhood to aid in all the work of the house and garden. The father was a man five feet eight inches in height, broad shouldered and active, but was never possessed of more than average strength and entirely uninterested in all matters of sport. His mother died when her son, who became the remarkable athlete, was but two years of age. She is described as a woman of queenly presence, magnificent in form and beautiful in face, but her death appears to have been due undoubtedly to phthisis. In a general review of his family history, Mr. Curtis attributes much of his own vigor, and rightly perhaps, to the fact that all his ancestors were temperate, hard-working people, entirely ignorant of the vice of excesses, and all living and dying in the country. There is nothing peculiar in the ancestral tendencies except that they had all died, so far as he knew, with few exceptions, of consumption. This is rather remarkable, however, as showing how this deadliest of human tendencies can be thrust into complete abeyance or stamped out.

W. B. Curtis was born January 17, 1837, the eldest of a family of fourteen, with one own brother and twelve brothers and sisters by a step-mother, who died in her thirty-fourth year, also of consumption. Of the children, but two step-brothers beside himself survived. The first eleven years of his life were spent at home, then two at Burr Seminary, three at Wabash Collge and one at Bell's Commercial College in Chicago. After leaving college he assisted his father for a year in newspaper work, then acted as bookkeeper and subsequently as cashier until the breaking out of the war. He thereupon enlisted as a private, but soon became captain and A. A. G., and served on staff duty until after peace was concluded. Returning to Chicago he was made a member of the Board of Trade, also the New York Gold Room; removed to New York in 1866, but returned to Chicago in '69, and again to New York in '78. The Chicago fire of October, 1871, causing the ruin of so many financially, numbered him among her victims and left him some thousands of dollars worse than nothing. After a struggle of six years and a half to regain his former business standing, which had been in the line of athletic teaching, etc., he gave up the fight and accepted his present salaried position on a paper in New York, where he has remained ever since.

Up to the year 1871, I learn that he always looked noticeably younger than his years, was frequently challenged and made to swear to his age when attempting to vote, as late as his twenty-eighth year; but the hard struggle with fortune after the Chicago fire aged him considerably, and made him look rather older than his years. He undoubtedly was what might be considered a very handsome man. My personal recollections of him go back quite twenty years, and I remember that he struck me then as having unusual clearness of eye and complexion, though always a little pale, and that the shape of his features was massive and handsomely strong. In his clothes he strikes one as being not a large man and rather stooped. This comes, however, of the immense size of the muscles of his shoulders and chest and a tendency not to stand as straight as he might.

While at school and college he was active in boyish games,—swimming, rowing, sailing, jumping, wrestling, running, playing at ball, and such like. He did not then especially distinguish himself. At twenty years he joined a boat club and rowed several races, but not liking the sport, gave it up. At about this time a gymnasium was opened in Chicago and he became a member. It was the distinct impression of his parents and their family physician that the relentless hand of consumption had marked him for its own; and therefore they rather encouraged his tendency to exercise, thinking that it might possibly prove useful, and if, peradventure, the measure should act in the opposite way and kill him, they resignedly looked upon it as but a slight anticipation of the inevitable. However, in this gymnasium he soon became astonishingly expert, early proving himself the equal of any professional, and while still very young made the extraordinary record, which still stands unbroken, of putting up two one hundred pound dumb-bells at the same time, one in each hand. During this time also he discovered quite accidentally that he was a very swift runner for short distances. In 1859 he made a series of careful experiments with the then professional champion of America who was training at Chicago for an important race, and found that he could outstrip him in any kind of a start; could beat two or three feet in fifty yards, ran a dead heat at seventy-five, and that this professional could beat him from four to six feet in one hundred yards dash, beyond this point he falling still further behind, at two hundred by twenty-five or thirty feet in the rear, and at a quarter of a mile, by fifty or sixty yards. From then on until 1876, he ran against every amateur he could find at all distances up to two hundred yards, and was never beaten until that year, at which time he was thirty-nine years of age, and at least nine years beyond the age at which sprinters are supposed to retain their fastest form.

During the war he was a mounted officer, riding an average of thirty miles a day for four years, and became so sick of the saddle that he has utterly eschewed it ever since. After the war his life was constantly that of a gymnast until 1868, when some of his associates in New York City coaxed him into a boat to supply the place of a friend who had met with an accident. He rowed this race and many others, largely at their solicitation, for this sport really never interested him, yet continuing thus for quite ten years. In 1868 he became one of the founders of the New York Athletic Club, and ever since has dabbled in various sorts of athletic games. To exhibit his marvellous versatility, it is interesting to glance over his gymnastic prowess, taking prizes and making phenomenal records on the parallel bars, horizontal bar, rings, trapeze and at leaping, at putting up one and two dumb-bell, at lifting with hands and with harness; in open air sports at running at the fifty, sixty, seventy-five, one hundred, two hundred and twenty and four hundred and forty yards, at a one mile walk, at one hundred and twenty yard hurdle race, at running long jump, at running high jump, at throwing the hammer and fifty-six pound weight. At the individual tug of war I believe he was never beaten. At skating one mile, at swimming one hundred and two hundred yards, at single sculls, double sculls, pair oared and four oared, and six oared boat races, he almost always succeeded in bearing off the prize. At about half of these various games he won championships at different times. Many of these performances were, when made, the best on record, and

V.1
189

three still retain that honor, namely: at four oared rowing three miles with a turn, lifting with harness, and putting up two dumb-bells at once.

He says, "Almost everyone considers my weight-lifting with harness as the most noteworthy of my feats, but I do not. I pin to this sheet a memorandum which will explain to you how it was done. I have a natural talent for mechanics, and had, by constant experiment and alteration, adjusted my lifting harness so perfectly, and took such care in all my trials, that accident or injury was well-nigh impossible, and my apparatus was so skilfully adjusted as to give to my arms and back just what they could carry, while putting the whole load on my legs, which were Herculean in shape and strength. I am too small a man to be a lifter of the heaviest weight, and this distinction is due not so much to my strength, as to my methods and my mechanical skill. I have seen a dozen men who could have learned in two years to lift 3239 pounds, with my apparatus adjusted to their size and shape, but never saw two who seemed to be able to learn to put up two 100 pound dumb-bells. My adjustable dumb-bells, and all my lifting belts, tables, weights and other gymnastic apparatus were destroyed in the Chicago Fire of 1871. I have never replaced them, and have never since practiced gymnastic exercises or lifting, either for pleasure or with a view to competition."

It is interesting to study with some care the physical history of a man who has been through such extraordinary strains and vicissitudes. He seems never to have had any infantile disease. At ten years of age he injured his knee-cap, which left the joint stiff for three months; at college had chills and fever. In 1860, while practicing the feat of shouldering a barrel of flour and transferring it from one shoulder to the other, he dropped the object, standing with his right leg somewhat flexed and directly under him and the left leg sticking out to the side and straight, which was broken, as he described it, "downwards and inwards." From this there appears to have been no permanent damage. In 1862, while in the army, he had the measles, and since there was nothing else to do, he kept in the saddle and in the rain for three or four days and nights, finally gave out, and was left at a wayside cabin, without food except the native hog and hominy, and without doctors or medicine. The outcome of this was typhoid fever, a hospital cot for several weeks and pretty profound exhaustion for two or three months. This appears to have been his last day in bed from accident or sickness up to the present time.

In 1867, in New York City, while trying to stop a runaway team, he wrenched his left leg and lamed his bad knee. To use his own words, "It seemed to me as if I had ruptured some of the fibres which guarded the joint, and that the synovial fluid was escaping in small quantities. Probably I was mistaken, as it eventually healed and wholly, but I could feel what the doctors could not see, and the joint seemed dry and would creak, and needed oiling. I consulted Dr. Carnochan, also Dr. Peters, and got a little comfort. They assured me that it might be a good enough family leg, but would never be able for athletic duty again. They swathed me in rubber bandages from toe to thigh, and rubber knee cap with compress where the lesion seemed to be, and I wore this for two years to my extreme discomfort. In 1882 I wore this while competing in hammer throwing, shot putting, tug of war, etc., and am far from sure that it did me any good. Since after this injury I won the championship of America in running, rowing, hammer-throwing, fifty-six pound weight throwing, tug of war, and lifted over three thousand pounds one hundred times, the knee seems to have done pretty good service despite its condemned condition. It still has, however, the ungentlemanly habit of telling me when the barometer falls."

In 1886, while skating, his left foot went down into an eel hole, while his right and forward foot kept on in front of him until "I was split down like a circus contortionist. The boys hauled me on a hand sled to a house, thence on a load of hay to the railroad. Medical examination showed a rupture of some of the fibres of tendon and muscle at the upper part of the thigh. Two months with a cane, however, brought me round all right." Eight months later he fell out of an apple tree and smashed his right shoulder, "breaking off, I believe, a little piece of the shoulder blade. I lived for two months with my arm strapped to my body under my shirt, but it finally got well, and has not since bothered me in any way."

He describes having suffered more or less for thirty years with a mild nasal catarrh, and having tried pretty much everything for its cure, but finally abandoned all and is none the worse for it. He never has taken cold in chest or lungs. "Whenever I take cold it goes to my head, and I blow it out of my nose in a few days." He announces with some satisfaction that he never takes any medicine, doesn't even use liniment for his sprains and bruises, but only cold water. He has never had rheumatism. Being slightly myopic, Mr. Curtis remarks with some satisfaction that his eye sight is as clear now in reading as ever. As to the use of tobacco, he made some early attempts at smoking, but since the weed gave him unusual horror, he has never practiced it, and confines his use of it "to what smoke ill-mannerly fellows puff into my face on the occasions which I cannot prevent."

After reviewing the rules by which Mr. Curtis has been guided in caring, either intentionally or unintentionally for his health, one is struck by certain extraordinary incongruities. His habit of living is very simple, and just about such as one might assume would be the choice for a man of active temperament, but as touching his diet, he has most extraordinarily unwholesome tastes, as he frankly admits. I add in his own language his views on his slow decadence of youthful vigor—a very fair estimate, too:

"My last boat-race was at the Watkins Regatta, in the spring of 1878, and my last public athletic competition at the championship meeting, in the fall of 1882. Since then I have taken no exercise, athletic, aquatic or gymnastic, for exercise, or with a view to improvement or proficiency, but only for amusement. I think my average falling-off in ability, from my best days, must be about 20 per cent. In some things it may be more, and in some is certainly less. In running it is all of 25 per cent. 100 yards, formerly in 10 seconds, would now need at least 12½ seconds, and the quarter-mile, formerly 51½ seconds, would now need 1 minute 5 seconds. In dumb-bells about the same as in running. I have at my summer home a pair of 75 lbs., and sometimes manipulate them for the edification of curious friends. Last year I tried them twice, and found it exceedingly difficult to do

with them what I used to do quite easily with the pair of 100 lbs. each. In rowing, hammer, 56 lb. weight, hurdling, skating and jumping, I think the deterioration is rather less than in running and with dumbbells. The distance which I used, at my best, to swim in 1 minute, 40 seconds, I can and did, last summer, cover in 1 minute 52½ seconds. On the streets, with hands down, I used to walk 5 miles in the hour, now 4½ miles keeps me busy. On a track, stripped, and with hands up, I used to walk six miles in the hour, but do not now think I could do more than 5 miles."

1504 Pine St., Philadelphia.

METHYL VIOLET AND BLUE.

Read before the Ohio State Medical Society, Cincinnati, May 6, 1892.

BY JAMES T. WHITTAKER, M.D.,
OF CINCINNATI, O.

As I am able in the short time allotted to each paper to present but part of my subject, I will ask permission to read a short *résumé* of the observations made by others, and then report my own cases in what time is left.

The first general knowledge of the aniline preparations came to us through the studies of the bacteriologists. As is now well known, the tubercle bacillus was discovered and declared by Koch in 1882 with the aid of methylene blue. The next reference was the claim by Kremiansky, 1888, to destroy this bacillus by causing patients to inhale this coloring matter. Then J. Stilling, Professor of the University of Strasburg, 1890, made the discovery that certain aniline dyes exercise a destructive effect upon bacteria in the living organism, and especially upon *suppurating surfaces*, hence he gave one of them the name pyoktanin, from πυον, pus, and κτεινω, I destroy.

Pyoktanin not only excludes noxious matter from the wound, he says, but destroys it in the wound and thus heals wounds and ulcers. It is entirely innocuous and odorless, but colors tissues profoundly, a point of value to the physician, as it gives him control of the region of application. The color is easily removed by the spirit of soap. It is used in the following forms: Powder 2 per cent., ointment, pencils, pastilles for the preparation of solutions; bandage 1 per cent., of gauze, cotton, silk.

The author issued a second edition of his first report in the same year. Antiseptics hitherto in use, he said, not only destroy bacteria, but also injure tissues to such a degree that a number of surgeons had abandoned them altogether, and were content with simple cleanliness with the use of heat and sterilized water. The botanists have long been acquainted with the fact that bacteria, bacilli and cocci of every kind are destroyed so soon as a membrane is thoroughly permeated by the diffusion of aniline dyes and intense coloration of protoplasm. Anthrax bacilli, pus microörganisms, etc., absorb these colors like a sponge. Bacteria are found to be colored before the coloring fluid can be seen in the field of vision. With intense coloration, movement ceases; the cell perishes. To determine whether these things which can be so easily recognized in cultures and upon the object glass may be seen also in the living organism, was the question which the author set himself to solve. Stilling engaged with him in his work J. Worthman. They discovered that the violet aniline colors were the most practicable. Other dyes, fuchsin, methyl blue, vesuvine, were less valuable. Methyl violet excelled all the colors, but had to be abandoned at first on account of its impurities with arsenic. In experiments upon animals, it was found that methyl violet introduced into the conjunctival sac, colored everything profoundly, and imparted with its deposit a metallic lustre to the conjunctiva and cornea. The epithelium desquamated in great masses in a few days, and showed under the microscope marked fatty degeneration, almost the picture of the phosphorous kidney. But these masses, together with the whole conjunctival sac, were free of bacteria.

Methyl violet in man causes dilatation of the pupils without paralysis of accommodation. Introduced in strong solutions, 1–1000, into the eye, it colors the sclerotic and conjunctiva intensely. The iris is markedly colored. Strange to say, it traverses the normal cornea without sensibly coloring it. But if the epithelium be broken, however slightly, the cornea is colored intensely. By the next day nothing of the color is to be seen. Great quantities can be injected subcutaneously in the rabbit and guinea pig; as much as 20 ccm. of a 1–1000 solution without injury. But great quantities introduced into the peritoneal cavity quickly produce death. Examination post-mortem shows the whole contents of the abdomen intensely colored blue. The blood keeps its normal color, and strange to say again the blood-vessels, even of the colored abdominal organs, remain entirely free. Of serous exudation or even of inflammation, there is no trace. Death follows probably in consequence of coloration and therewith paralysis of important nerve centres. All this of course concerning chemically pure aniline colors.

Theoretically, the author has found that a hypopyon *keratitis* in rabbits, artificially produced by inoculation with the staphylococcus pyogenes aureus, was quickly jugulated with the instillation of a few drops of methyl violet solution. Not only the surface of the ulcer, but also the pus floccules in the anterior chamber were colored. Scrofulous corneal ulcers which had hitherto defied all treatment were seen to heal under it by the instillation of a few drops, or by sterilization by means of the aniline pencil. Similar results were obtained in *blepharitis, conjunctivitis, phlyctenulæ and eczema of the lids.* Quite as remarkable were the results obtained in parenchymatous keratitis, serous iritis, and even in internal diseases, disseminated choroiditis, sympathetic ophthalmia.

The same effects were observed in surgical cases, as in *suppurating inflammations*, in the bed of the finger-nails, panaritium, burns, etc. The authors soon reached the conclusion that suppurative wounds and ulcers treated with aniline colors are certainly sterilized, provided only the dye be made everywhere to reach the pus. An old man of 70 had on the whole of the left leg a profusely suppurating *varicose ulcer* which refused to heal. After thorough sterilization with the aniline dye, it healed in a few days. The authors extended their observation to the field of antisepsis in gynecology and obstetrics. Methyl violet solutions of 1–1000 to 1–2000 suffice for the sterilization of instruments. Wounds are washed with solutions of 1–2000 to 1–1000; sewing silks, cotton and gauze are impregnated with 1–1000. Stitch abscesses are impossible under this *régime*. Florid suppurating processes must be subjected to appropriate technique by insertion of solid masses with pencils, powder, etc.

The authors take a bird's eye view of the possibility of therapy in infections which do not depend upon the bacteria of pus, and intimated that remarkable results are to be accomplished in syphilis and many diseases of the skin. They had, they declare, very satisfactory results in the treatment of ulcers.

The aniline dyes with which the authors experimented were prepared by Merck, of Darmstadt, and offered under the names pyoktanine cæruleum and aureum. The latter of course is not a violet, but a yellow aniline dye, which is especially appropriate in diseases of the eye.

These remarkable statements were not allowed to go long unchallenged. Carl, of Frankfort, found that in the lighter forms of conjunctival catarrh and the milder cases of blenorrhœa neonatorum and scrofulous conjunctivitis, methyl violet had about the same virtue as a weak solution of boric acid. In granulations it was necessary to appeal to caustics.

As to affections of the cornea, the author never got any jugulation by methyl violet. In one case circular abscesses with subsequent dissolution of the cornea occurred. Whether or not it was due to the methyl violet, it was impossible to say, but it impressed upon the author the necessity of caution in its use.

Braunschweig, of Graefe's clinic in Halle, treated seventy cases with pyoktanin. In one case of perforation injury, it seemed that the remedy, if it did not prevent, at least retarded a beginning panophthalmia. All the other cases were hardly much benefited by the use of it. All the corneal ulcers cauterized and later subjected to paracentesis showed as good a result as with aniline, and in a much shorter time. The author therefore could not agree with the claim of Stilling that methyl violet surpasses all other remedies hitherto in use in the treatment of corneal ulcers. In a certain series of cases, it seemed to exercise a direct injurious effect. A small tubercle on the hand of a servant in the anatomical room touched twice energetically with the methyl pencil, so far from curing the affection developed a fresh lymphangitis, which brought the patient to the surgical clinic.

Lainati and Denti found the remarkable claim of Stilling established in only one of all the cases in which they used the remedy.

Next, Jaenicke published the result of his bacteriological studies, showing the effect of methyl violet and auramine on pure cultures of the staphylococcus pyogenes aureus, streptococcus pyogenes, bacillus anthracis, typhus and cholera bacilli. The most successfully treated of all the microörganisms was the staphylococcus aureus, whose growth in bouillon was entirely checked with a solution of methyl violet as weak as 1–2,000,000. Then followed the anthrax bacillus, streptococcus, cholera bacillus. The typhus bacillus continued to grow at 1–5000, a concentration followed by deposit of the coloring matter. Cultures on blood serum required much higher concentrations, but the relative resistance of individual bacteria was the same as that in bouillon cultures.

The efficacy of the yellow coloring matter, auramine, was much less. As to the destructive effect upon bacteria, it was shown that the staphylococcus pyogenes aureus was destroyed with the solution of 1–1000 in half a minute.

Concerning toxic effects, rabbits endured the subcutaneous use of a solution 1–1000, if the amount of coloring matter introduced stood in relation to the weight of the animal as 1 to 35—to 50,000. But the injections of much weaker solutions in still smaller quantities into the peritoneal sac causes death almost without exception.

Schubert reports that while pyoktanin was of no value in two cases of keratitis, it is of very decided value in those contused wounds of the fingers and toes, which occurred in stone workers. The patients came direct from their work with dirty hands and feet. No water was applied purposely, but the wound surface and the whole members, fingers and toes, were penciled with solutions 1:500–1000. The crushed parts were restored to their position, not united by ligatures but simply retained by a bandage of iodoform gauze, and over it was run a cotton and a starch bandage. By the next day the wound showed a beautiful rosy color and no sign of inflammation. The treatment was repeated. On the next day a union had taken place. A simple zinc salve finished the treatment in a short time, five days. A superficial panaritium in one of the same patients was healed with a single brushing with a pyoktanin solution. Schubert says he was led to use the remedy in this way by the belief that the bacteria had not penetrated to the depths of the tissue, and that if they could be thoroughly reached at once, they would be deprived of any possibility of injury; and so it turned out. The wound showed, as stated, on the very next day a fine, fresh rose color without the slightest sign of irritation. With the exception of some burning there was no pain after the penciling. The author recommends the use of the brush with the stronger solution 1:500–1000.

On the other hand, again, Garrè and Troja, of Tubingen, found the remedy of not the slightest value in suppurative wounds and ulcers, in panaritium ulcers of the leg and phlegmonous inflammations. According to the bacteriological investigations of Troje, pyoktanin does inhibit the development, but even after twelve hours, does not certainly destroy the microörganisms of pus.

Peterson, of St. Petersburg, treated forty-eight patients with the pyoktanin pencil or solution. Twenty were cases of ulcus molle, eight ulcus durum, the remaining twenty were cases of ozæna, ulcera gummosa, keratitis, and a few small incised wounds. A 1 per cent. solution in a case of *ozæna syphilitica* destroyed the odor at once and cleansed the ulcer in the course of three to four days. Favorable results were observed in all the other cases, so that the author comes to the following conclusion: Pyoktanin used in pencil or powder 2–1000, talc and solution 1:1–100–2000, certainly acts as an antimycotic in infected as well as in non-infected wound surfaces, and ulcers. It is as good as iodoform, and has the advantage of lack of odor. It shows the same virtues in cases of ulcus molle and gummatous ulcers as in cases of disease of the eye. Complications or toxic effects of any kind were not observed.

Since his first report, the author in hundreds of successive cases of ulcus molle has abandoned the use of iodoform altogether for that of pyoktanin. The same good effects were obtained in cases of urethritis after injections of 1:1000–1:100. But the preparation is to be used with care because it discolors linen. The timely touch of dilute hydrochloric acid will remove the spots from the hands and wash.

Kessler, of New York, used the remedy in forty-two cases with remarkable results. One case of a *syphi-*

litic ulceration of the head which had withstood all treatment for two months ceased to suppurate at once after drainage and the use of a strong solution. Another case of bad *decubitus* in a paralyzed man, which a number of physicians had tried in vain to heal, stopped suppurating in twenty-four hours after the use of pyoktanin in substance, and showed every prospect at the time of report of covering the surface with healthy granulations.

Fessler, of Munich, covers in recent wounds of the head with a solution of 1–10,000 and a layer of hydrophilic gauze moistened in the same solution. Healing occurs in a few days without any reaction. The same results were obtained in a more extensive injury to the head which reached down to the bones. Bacteriological experiments showed that antimycotic properties are obtained only with a somewhat stronger concentration. The author found a solution of 1–1000 most useful. Wounds show very quickly after the use of methyl violet a fresh, red appearance, while the inflammation speedily subsides.

Kanne used a pure preparation free of arsenic and phenol in the treatment of *acute gonorrhœa*. The discharge was diminished one-half after the very first injection. The second injection reduced it to a minimum and the third stopped it altogether. The patient was thus cured in four days.

Mosetig-Moorhaf, of Vienna, reports on the use of the aniline dyes in *inoperable malignant neoplasms*. The results were obtained in sarcoma as well as in carcinoma, but better in the first than in the last. The subjective signs of improvement were diminution of pain, increase in the general health, elevation of spirits, improvement of the functions of the affected organs. Objective changes were shown in certain cases, sometimes earlier and sometimes later, in diminution of the size of the tumors. Sometimes the treatment failed in highly vascular and extremely rapidly growing, soft tumors, but even in these most refractory neoplasms there could be observed a temporary check, or at least a diminished advance of the growth. One of the remarkable observations in cases of ulcerative neoplasms was the general cicatrization of the whole surface, especially if methyl violet had been applied directly to the surface. The author observed as immediate effects after parenchymatous injections the following appearances, which however did not reveal themselves constantly: œdematous swelling of the injected parts and their vicinity without inflammatory reaction; the development of centres of softening; sometimes constitutional signs, chills and fever. In conclusion, it is repeatedly emphasized as a practical demonstration that certain cases, it may be exceptional cases, of malignant neoplasms, are caused to disappear under aniline therapy, and that neoplastic ulcers are brought to a state of cicatrization. As to recurrence, the remedy is too new for facts. Pyoktanin cæruleum is certainly indicated in all those cases of malignant neoplasms which, on account of neglect or previous operative failure, may not be addressed in other ways. The latest improvement in the remedy is the substitution of pyoktanin by carmine, *i. e.*, carmine 1.0–10 per cent., soda lye 1.5, distilled water 50.0. Mosetig maintains that the effect of carmine is more sure than that of pyoktanin. Cleveland, of Cincinnati, in a verbal report to the writer, uses carmine habitually in these cases.

Boas, of Berlin, comments on the report of Stilling and Worthman, and the various contradictory reports that have since been furnished. The investigations of Beck and Penzoldt with the staphylococcus aureus and milsbrand bacillus certainly demonstrate the inhibitive effect of aniline colors. Liebreich called attention to the fact that the violet dye, especially methyl violet, has such a various origin and different composition that results are uncontrollable. This fact may account for the diversities of individual observation. Braunschweig, as quoted, found opacities of the cornea and pseudo-croupous inflammations of the mucous membrane after their use. Mauthner makes a similar complaint. Rölloff had but little good to report from the polyclinic of Kolliker. They could see in no case a jugulation or a control of the process of suppuration. Patrezek reported bad results in the field of otology. On the other hand, Bresgen was more fortunate with diseases of the nose after caustics with the use of a solution of methyl violet 2–1000. The application of cotton dipped in such solution brought about a speedy cure. Kellerer reported a quick improvement in a case of croup with the appearance of stenosis, under inhalation of a solution of 5–2000. Scheimann recommended the remedy in tuberculous ulceration of the larynx and the nose. It has been used also in catarrh of the bladder and cervical catarrh. Subsequent communications vary in the same way. Peterson, though, supports the remedy. Wancher is very friendly to it in the field of ophthalmology. It is a remedy of extra virtue, he claims, in suppuration of the tear sac. Cholewa found pyoktanin valuable when strewed as powder in suppuration of the frontal sinus.

The reviewer quotes next Mosetig-Moorhof's observation in malignant neoplasms, notwithstanding the fact that Stilling had maintained that injections of aniline coloring matters into the circulation might not remain innocent. The best preparation for such purposes, Stilling maintains to be the pure hydrochlorate of hexæthylpararosanilin, which has been brought out by Merck under the name ethyl pyoktanin. Schleu recorded a case of cure of cancroid of the cheek by the use of pyoktanin in powder. In this connection also should be reported the case of Einhorn, of an inoperable carcinoma of the uterus which was much improved by an internal treatment with 0.2 methyl blue in fourteen days. The tumor became smaller and harder. Boas claims that he saw in a case of cancer of the stomach, after an injection of methyl violet 1–300, favorable effect upon the appetite and the general health. The tenderness of the tumor diminished, but the final exitus was not prevented by these injections. Billroth sees no good effect in cancer or sarcoma. It must be remembered that an absolutely chemically pure individual preparation is not yet in the market.

Based upon the observation that methyl blue exercises a particular effect upon the nervous system, Ehrlich and Leppmann employed the remedy in neuritic processes and in rheumatic affections of the muscles, joints and tendons. The analgesic effects occurred, without exception, in a few hours after the introduction of the remedy, and increased after appropriate dosage in the course of the following hours, until all pain disappeared. The appetite, digestion, pulse frequency, general strength, were not affected by the remedy. It was given either subcutaneously 0.02–0.08, or internally 0.1–0.5 in gelatine capsules.

The highest daily dose was 1 gram (15 grains). Lenne observed also in a case of carcinoma of the pylorus and liver, the analgesic effect of methyl blue 0.2 in capsule. Immerwahr had in six cases of sciatica no success, but in two cases of trigeminus neuralgia, the most surprising success. The remedy proved of great virtue also in three cases of angiospastic migraine. Cases of nervous headache and katzenjammer were quickly allayed by methyl blue 0.1. The same author observed favorable results also in muscle rheumatism and herpes zoster.

In his last communication, Stilling remarks that two years have now elapsed since the introduction of the aniline colors as antiseptics, during all of which time the remedies still hold their place. To the objection of Liebreich that pyoktanin is not a chemically pure body, it is urged that Merck has brought into the market a pyoktanin cæruleum which is at least free from all admixture with arsenic, phenol, sulphate of copper and chloride of zinc. This preparation is entirely innocent. No one except Braunschweig has ever seen any really injurious effects, and in his cases, the evil effects were due to the fact that he used a common commercial methyl violet, which Stilling long ago warned against as dangerous. The fact that the ophthalmologists got no bad results with their use of the pure preparation is the best proof of its innocence. Very recently chemists had prepared a blue pyoktanin which is a definite body, chemically pure, the so-called ethyl pyoktanin. Merck also had a crystallized pyoktanin, known as crystal violet, which is likewise absolutely chemically pure and constant. This substance, with methyl blue and malachite green, is better adapted for some purposes, because more easily soluble in common salt and less easily diffusible than methyl blue. In the treatment of wounds and ulcers, methyl blue is not so valuable as the more powerful antiseptic, pyoktanin, which has also the additional virtue that it remains longer upon the surface. On the other hand, for internal use, methyl blue is much to be preferred, because of its penetration. For the same reasons intestinal mycoses are best treated by pyoktanin, which remains upon the surface.

The author still maintains that the further use of pyoktanin has only confirmed him in his original opinion regarding the value of the remedy in checking suppuration. Gelpke, of Carlsruhe, got the most remarkable results in cases of corneal disease, where other methods had left the physician in despair. The difference of different observers depends upon a simple fact. In the lighter cases, where the surface is not sufficiently broken, the remedy does not penetrate to the depths as it does in the worst cases of broken ulcerated surfaces. The ophthalmologists, Meyer and Panas, accept the method, and confirm the results in cases of corneal ulcer.

Liebreich's detractions regarding the impurity of the preparations put a damper on experiments with the drug for some time. It made many investigators timid, and subsequent studies were very tentative. Now, however, that this objection has been nearly overcome, it is seen that we possess in these agents antimycotics that are singularly innocent to the tissues. All comparisons among disinfectants must start out with the solutions of sublimate which still surpass everything known. Corrosive sublimate destroys bacteria in general without spores in the proportion of 1:10,000, and with spores 1:1000. The pus microörganisms have no spores; neither does the diplococcus of pneumonia. The bacillus of typhoid fever, of diphtheria, of glanders, so far as is known form no spores; neither do the spirilla of cholera and relapsing fever. But though the dilute solutions of sublimate are strong enough to destroy these bacteria out of the body, they do not attack them in the body, because of the combinations they make with albumen, which weaken the sublimate or quickly decompose it. Thus the cholera spirillum is killed by sublimate in the proportion of 1:60,000, but in blood serum only by 1:1000 or 1:800. The typhoid bacillus in bouillon is killed by sublimate 1:10,000, but with 10 per cent. egg albumen the solution must be 1:1000.

Various methods have been devised to preserve the supreme power of sublimate in the presence of albumen, as by the addition of sodium or ammonium chloride, of hydrochloric acid, etc., and with such effect as to have largely met the difficulty, but nothing has been discovered which will make corrosive sublimate safe. So that the use of it, except as an outside aseptic and disinfectant, has been practically abandoned.

The aniline dyes do not unite with albumen. They make no compounds. They penetrate directly and entirely, sometimes so quickly as to disappear from the surface visibly.

According to Boen, bouillon cultures of pathogenic bacilli are sterilized by aniline violet in two hours in the following proportions:

Anthrax bacillus, 1:5000; diphtheria bacillus, 1:-2000; typhoid bacillus, 1:200; cholera spirillum, 1:1000.

Malachite green is still more active, as it destroys anthrax bacillus, 1:40,000; diphtheria bacillus, 1:-8000; glanders bacillus, 1:300; cholera spirillum, 1:5000.

In many regards these figures correspond to the potency of carbolic acid. Carbolic acid is much more stable and much less influenced by albumen than the mercuric chloride.

Bolton found that the addition of 10 per cent. of egg albumen to bouillon cultures of typhoid bacillus did not materially influence the result. This of the pure acid, of course. But much of the carbolic acid of commerce is not pure. The crude stuff contains only 25 per cent. phenol; that is, three-fourths of it is impure.

There is objection to carbolic acid in that in concentration it has caustic effect, and in quantity toxic effect. The anilines have no causticity whatever, and when pure no toxicity.

The only other agent with which the anilines might be compared is the old potass. permanganate, which the older practitioners remember was in fashion as a disinfectant in their earlier days. But the permanganate is farther behind in virtue than in time. According to Jaeger, it is very feeble. It fails to destroy the anthrax bacillus without spores in the proportion of 1:100. To produce this effect it must be present in fact in the proportion of 1:20. A percentage so great as 1:50, according to Sternberg, fails to attack the micrococcus of Pasteur in the blood of a rabbit.

The rapid diffusibility of the anilines would seem to put them in the first place as internal antimycotics. But there is of course no seem in science. They must be tried in individual diseases. In tuberculosis they made a flat fiasco. Kremiansky claimed to have

wrought remarkable results, but the claim had no support other than temporary general improvement.

Bertalero afterwards published the cure of eight cases. Billings failed with two, and Seslaim tried it faithfully and failed utterly. It is only fair to say, however, that the remedy was used in these cases by inhalation, which is a useless method of employing anything in tuberculosis, because the bacilli in the bronchi and in cavities and abscesses are already dead.

Guttmann and Ehrlich published their famous experiments with malaria in the *Berlin. Klin. Wochenschrift*, September 28, 1891. They demonstrated the disease by coloring the plasmodium from a drop of blood from the finger by the Italian method, *i. e.*, by treating the drop with a little human blood serum lightly tinged with methylene blue. They were led to use the drug therapeutically because of its property of penetrating to the corpuscles and coloring the nuclei of nucleated bodies. The result was very remarkable, to use with as little emphasis as possible this highly elastic and much abused term. Remarkable, as these authors said, because no combination of chemistry ever yet devised a drug which could produce any effect upon the parasites of this disease. The fever disappeared in the first few days, and the parasites disappeared from the blood at the end of the first week. They gave the remedy in doses of 2 grains in capsules five times a day, at first at intervals of three hours, and later, to anticipate a quotidian attack, every hour, five times. It was found necessary to continue the remedy in doses of 7 or 8 grains per day for eight or ten days, and in very severe cases a much longer time. The maximum dose ever administered was 10 grains. The only evil that ever followed was irritation of the bladder, frequent micturition and dysuria. This evil was easily obviated by the use of powdered nutmeg, the end of a case knife full several times a day, a remedy in old use in Munich in relief of irritation of the bladder after the ingestion of fresh beer. The oil of nutmeg does not answer so well. Grawitz failed in breaking up one severe case in which he afterwards succeeded with quinine, and in another case in which he could find no plasmodii in the blood.

During the last three months I have made use of solutions of methyl violet and blue in all the cases hitherto mentioned except the purely surgical cases. I made it a point to substitute it for every other antiseptic, disinfectant or antimycotic agent in the ordinary routine of office practice. I soon reached the conclusion that much stronger solutions than those mentioned could be borne not only with impunity but with benefit, and had the remedy prepared in the strength of 1–100. These were my standard solutions and are indicated, unless otherwise specified, in all the cases mentioned.

The mode of application was for the most part with a cotton-wrapped sound. I use the perfectly smooth, flat steel rod about the diameter of a uterine sound, very lightly indented with half a dozen notches on each side at the end. A strip of cotton is quickly turned about the rod with a twisting motion of the handle to the extent of 4 to 6 inches, that the index finger of the right hand may fix the end of the cotton and prevent its detachment on withdrawal from a cavity with close walls, as from the nose or cervix uteri. After withdrawal, the cotton is quickly stripped from the rod by the aid of a piece of fresh cotton between the finger and thumb, that the hands, especially the finger nails, may receive no stain. Sensitive surfaces are anæsthetized with cocaine, 4 per cent. solution, applied in the same way. The cocaine is used simply to blunt the sensation of pain produced by the cotton itself, not by the remedy, which when pure, as stated, excites no pain or other irritation. Any accidental staining of the fingers of the practitioner or the face of the patient may be quickly washed away.

In the throat the remedy is best applied by means of a ball of absorbent cotton with the laryngeal forceps. Simple catarrhal affections are subjected to a universal swabbing process with a large mass of cotton. Laryngeal lesions are addressed more directly with a mirror and a small pledget in the grasp of the laryngeal forceps. In extensive intra-laryngeal disease, syphilis, tuberculosis, I allow the fluid to be squeezed out in quantity, by the contraction of the larynx, from a larger mass of saturated cotton introduced into the larynx itself. The irritation thus experienced is not greater than that which follows the use of cocaine, and is all due not to the drug, but to the foreign body. The urethra is treated by means of injection, either by the catheter of Ultzmann in medication of the prostate and its urethra, or by the full-length catheter in the treatment of the bladder itself. The remedy is so quickly eliminated by the kidneys as often to medicate the bladder and urethra sufficiently by internal treatment.

Messrs. Fennell and Heister, druggists of this city, have been kind enough to prepare the specimens which I now present, to-wit: tablets and capsules of 1 and 2 grains of methyl violet and blue. The remedy is given preferably in capsule internally, to prevent staining of the mouth. I have here also a specimen of urine passed by a patient this morning after having taken a 2 grain capsule of methyl blue last night upon retiring. The urine is as blue as if colored by indigo. Patients thus treated will continue to pass urine colored in this way sometimes for twenty-four to forty-eight hours after cessation of the remedy. The secretion then passes through various shades of light blue and green before it reaches its natural color. It commonly happens that patients will then, after the lapse of several hours or even days, again pass colored urine, proof that the substance, however diffusible, remains confined for some time in certain parts of the kidney; illustration also of the fact that healthy urine may come from a diseased kidney, that is from sound parts of a diseased kidney, explaining the alternating presence and absence at times of albumen.

I present to the Society also the body of a rabbit, split open along its abdominal surface and everted. It will be seen that the abdominal organs, including the peritoneum, are stained various shades of blue from a light bluish gray, as best shown in the colon, to the deep blue of the extended peritoneum. This animal received one hour ago four hypodermatic syringefuls of a solution of methyl blue 1–500. The injections were made all subcutaneous only, the animal showing, between the time of the injections and the death by chloroform, no signs of distress whatever.

I have had no experience whatever with the use of the remedy in the eye or ear, but abundant experience in the nose. Catarrh of the nasal fossæ is the most common malady that presents itself in office

practice. It is for the most part a trivial malady with associate mental distress out of all proportion to the lesion. Nasal catarrh is for the most part simply an objective and obtrusive excuse for complaint by idle and querulous people. Cure of the catarrh will not cure the patient but will remove the reproach from medicine to some domestic infelicity or other incapacity of this class. The application of methyl violet upon the cotton wrapped sound dries up the excessive secretions, relieves the sense of fullness and oppression of which these patients make such complaint. It is especially valuable after the use of the galvanic cautery, the use of which with the cheap apparatus recently devised, has become a universal fashion. The effect is not so good in the throat, as the remedy disappears so quickly from the surface. Methyl blue sinks into the mucous membrane like water in sand. Patients sometimes pass blue urine after a single treatment of the throat in this way. Methyl violet remains longer upon the surface and hence is better adapted to these cases. The moisture of excessive secretion disappears after the use of methyl violet to leave a surface more dry and glazed. Methyl violet is equally efficacious with the nitrate of silver and causes much less distress than the stronger solutions, one or two per cent. of nitrate of silver, which alone are of any value in pharyngeal catarrh. Both preparations give more relief in cases of laryngeal affection, especially in laryngeal tuberculosis, than any other remedy except cocaine, and the relief of cocaine is so transitory as to be of little value.

With the first publication of the experiments of Kremiansky I gave methyl blue thorough trial by inhalation, especially in the bronchitis of tuberculosis, and as stated for the reason we now understand, without effect. But upon the endometrium, methyl violet acts better than carbolic acid and has the advantage over it that it produces no subsequent desquamation with retention.

Catarrh of the bladder is a proper field for the use of the remedy. It may be introduced by injection as stated in the proportion of 1-1000, when it has about the value of a solution of the bichloride 1-20,000. It is a little harder to handle on account of its stain, but is always less irritating than the weakest solutions of the bi-chloride. Pyelitis, cystitis, prostatitis, are affections which call for the use of the remedy internally. Here it should be given in dose of 1 or 2 grains every two to six hours. So soon as it appears in the urine, it stops all decomposition and at once makes a foul urine perfectly sweet. It does not cause to disappear mucus and pus, epithelial or other debris, but prevents their fermentation, and prevents sepsis, due to this cause.

The most illustrative case in my practice in this particular, was that of a gentleman with ectrophy of the bladder. This individual suffered periodical attacks of fever, one of three months duration, more frequently of one and two months, resisting every kind of medication. The exposed wall of the bladder was covered with incrustations of urinary deposit, and notwithstanding every cleanliness under the constant supervision of a trained nurse, the urinous odor of the body was offensive. Under the use of capsules of methyl blue, 2 grains every two hours, the local condition changed at once, the fever subsided in three days, and the gentleman, a merchant, returned to his business within a week. Under the continued use of the remedy in dose of at least two grains three time a day, the patient has remained well ever since, that is over a period of three months. A relapse which followed a convivial indulgence was checked within twenty-four hours by a return to the original dose. There was no irritation of the bladder in this because there was no neck of the bladder to irritate.

I have had frequent occasion to use the remedy internally and subcutaneously in the treatment of vague neuralgic and rheumatic pains, but by no means always with the success usually reported. One case of nervous prostration following a debauch, katzenjammer, yielded in the course of a day to doses of one grain every three hours, whether post hoc or procter hoc, it was impossible to say. In ordinary neuralgic and muscular pains the remedy is not so useful as the salicylates. But there is one form of neuralgia, over which it seems to exercise sovereign control and that is the neuralgia due to malaria. It is a striking comment upon the disappearance of malaria in crowded cities, or upon the universally understood value of quinine, that well-marked examples of this disease become rarer every day. I have not had the opportunity in three months of seeing a single case of distinctly marked chill, fever, and sweat, of malarial fever. But masked malaria abounds and especially in the form of obstinate gastralgias. These are the cases which yield much more readily to methyl blue than to quinine or arsenic. In these cases the remedy must be given in connection with the powder of nutmeg, as the large dose necessary to secure effect, produces at times intense irritation of the bladder. One striking case, that of a lady affected with periodic gastralgia at night only, and then with such severity as to prevent sleep even under the use of anodynes, yielding only to maximum doses of quinia, which produced discomfort greater than the disease, was entirely relieved by the use of methyl blue, one grain every three hours at first, and later on three times a day.

One other case, that of a young man suffering also nocturnal pains, irradiating from the spinal cord, manifest chiefly at the right hypochondrium and epigastrium, defiant of electricity, morphia, arsenic, was not influenced in the least by the use of methyl blue. At a later examination, the case turned out to be a caries of the vertebræ.

But I wish rather to speak of principles than cases, and I may bring this report, already longer than I had anticipated, to a close with the claim that the aniline colors, on account of their innocence as well as their virtue—*primum non nocere*—have a field of usefulness already, and a promise of much more.

PREPARATION FOR THE STUDY OF MEDICINE.

Portion of a Doctorate Address of President

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Incomplete is a discussion on this subject that does not include a consideration of the great value of an elementary knowledge of Latin and Greek.

I here most seriously disclaim any attempt to prove that devotion to Latin and Greek for the purpose of reading the literature of these languages is either requisite or even desirable as a preparation for the study of medicine. The field of modern literature

and of modern science has become so vast and important that the average student will find neither time nor relative profit in the attempt to *master* the ancient classics.

I do, however, earnestly advocate the rudiments—I mean simply the rudiments—of Latin and Greek, as most valuable labor-saving instruments in acquiring an English, a scientific and a medical education.

I ask indulgence if I dwell somewhat at length on this portion of my subject, for I think we are in danger of losing sight of the many and great benefits which every true student will receive from a judicious study of some things in these living dead languages. My argument turns on the word judicious, as applied to the extent and method of the study. The old methods, as unphilosophical as they well could be, and the undue time and labor devoted to the classics are worthy of radical change in the modern system of education.

Consider the vast array of technical terms and of common English words in our general and scientific literature, which are also pure Latin and Greek words. Look at this remarkable series of paradoxes! A young man may never have learned a single word of Latin or Greek, and yet under ordinary circumstances he has learned by hearing and reading English several hundred Latin and Greek words; if he is especially intelligent, at least three thousand. When he receives his degree of Doctor of Medicine, he has learned by the most painful toil several hundred technical terms taken from these languages, and still does not know a single word of Latin or Greek. He can count in Latin and Greek, and yet is in ignorant bliss of the fact, for he could not give on demand a single numeral of these languages. He already knows the names of several colors, of several of the elements, and yet cannot tell one of them. He knows the Latin and Greek names of every member of the body, of every organ, tissue, fiber and fluid, and of all their diseases, of all the senses and functions, and the words to express writing, describing and measuring. If, however, he was asked to give the Latin and Greek synonyms for any of them, he could not give it.

Now for the pith of what I have to say: A rudimentary Latin, as also a Greek, grammar with the readers should be constructed for the primary object of teaching English; secondarily, of teaching Latin and Greek.

The Latin grammar, save perhaps fifty connectives and other important words, should contain scarcely forty pages of declensions and conjugations, with only a very few rules. Every word of this grammar should be a good English word, with possibly a slight change of a letter or syllable.

The Latin reader should contain at least a hundred and fifty pages of pure, even elegant Latin from classic prose and from poetry, almost every word of which would be a good English word.

We will present a few examples:

"Labor omnia vincit."

"Poeta nascitur, non fit."

"facilis descensus Averno:
Noctes atquedies patet atri janua Ditis
Sed revocare gradum superasque evadere ad auras.
Hoc opus, hic labor est."

"Literae adulescentiam alunt, senectutem oblectant secundas res ornant, adversis perfugium ac solatium praebent, delectant domi, non impediunt foris, pernoctant nobiscum, peregrinantur, rusticantur."

"Homo sum, humani nihil a me alienum puto."

"Pallida Mors aequo pulsat pede pauperum tabernas Regumque turres."

These, of course, could be preceded by many simpler sentences, such as "Tempus fugit." "Res sacra est miser."

As the multiplication table must be committed to memory before the child can progress in arithmetic, so the few pages of declensions and conjugations must be memorized, that the beginner may become perfectly familiar with Latin terminations. With this preliminary exercise, the scholar would then find no perplexities, and would read almost at sight all the sentences in the reader.

In the vocabulary at the end of the reader with every principal word should be arranged all cognate words. With the definition of each word should be presented all English words derived from it.

Instead of exercises in transposing English into Latin, I would for the first year direct the energies of the pupil in the discipline of memorizing by easy tasks the classic sentences I have just described.

There seems to be a growing prejudice among educators of recent times against the practice of "learning by heart." I am convinced there is no way by which one can make more rapid progress in learning a language, either ancient or modern, than by committing to memory wisely selected sentences and phrases.

This is the natural method of learning a language. The child, from the time it attempts to utter its first syllable, never speaks that syllable perfectly till it has learned it by heart. In a single year the pupil will learn far more Latin than in two or three years by the methods usually pursued in our public schools.

The same plan should be pursued in teaching the elements of Greek. Thirty pages of grammar, each word of which should be an English word, except fifty connectives and other important words, would suffice.

There would be some difficulty in filling a Greek reader with gems of Greek, which would also be English. A competent Greek scholar, however, with the aid of fifty connective words not English, could compile a few such sentences, and paraphrase others. He could arrange simple narrative of facts from history, biography, geography and mythology, in which the several hundred Greek words in our language could be formed into quite long sentences, and convey much useful information.

Pardon me for reading a dry list of familiar syllables to call to your minds a multitude of Greek-English words which, properly arranged, would fill many pages of instructive reading—words ending in graph, gram, meter, logue, asm, scope, sis; words commencing with dia, a or an, kata, para, apo, hypo; hyper, hydro, phos, sym or syn, phil, peri, tech, tel; words in which the following are important syllables: hepat, soma, stoma, ptoma, tony, pneuma, deme, crat, arch, bion, phon, tone, sarc.

There is a great need of such elementary text-books for the use of professional students, the preparation of which is worthy the attention of any ingenious and thorough Latin and Greek scholar. As far as I am aware, those which have been heretofore arranged do not possess vocabularies sufficiently extensive for the use of the medical student in studying technical terms. The portion devoted to grammatical forms is

also inadequate. Moreover, the quotations and other sentences are not selected with reference to their elegance of expression and beauty of sentiment, which render them suitable for memorizing; nor do they seem to be selected with special reference to the useful knowledge they convey.

The vocabulary should be sufficiently extensive to present not only all words used in our general literature, but also in the sciences. The following examples will illustrate my meaning:

Tango, tangere, tetigi, tactum (contingo, contingere, contigi)=To touch. Tactus=Sense of touch. Tangent, tangible, intangible, tact, intact, contact, contiguous, contiguity, contingent, contingency (integer, integral!).

σαρκαζω=To tear flesh like dogs. Sarcasm, sarcastic.

σαρκιζω=To flay. Sarcoma, sarcosis.

σαρκινος=Fleshy. Sarcous, sarcocele.

σαρκοφαγος=Flesh consuming. Anasarca.

σαρξ-κος=Flesh. Sarcophagus.

"κακων πελαγος"

κακος—Bad, evil. Cacodyle—cachectic, cacexy—cacoethes, cacophony.

πελαγος=The Sea. Archipelago.

After this study of English Latin and Greek, the student can understand without difficulty the technical terms of every science in every modern language. He is also able to trace the derivation and meaning of new terms which are constantly formed in every department of knowledge.

He possesses the key by which he can acquire two modern languages in the time otherwise required for one; he enjoys a deeper insight into the spirit of all literature; he has a systematic knowledge of sufficient Latin and Greek to enable him to continue alone his reading of the classics if he has the time and taste so to do; he has increased and perfected the vocabulary of his own language, which, in very great degree, is a measure of mental development, and which possesses an intrinsic value almost beyond estimation.

This course is relatively easy, since the pupil makes use, through every step, of a large vocabulary which he has in great measure already at his command. After he has once learned the inflections, he makes rapid progress in comprehending the simpler forms of construction. He soon recognizes at a glance important "stems" in English words, even when they are disguised, as in microbe and autobiography, in telescope and episcopal, and in chylopoetic and poetry.

A vast majority of pupils in our high schools drop their studies at the end of their second year. They have spent so much time in struggling with an absolute y strange vocabulary and idioms that they have learned very little English, and still less Latin and Greek. By the plan here advocated, they will have made progress in their own language and acquired considerable knowledge in the ancient languages—an excellent foundation for further study in any field. They will have stored their minds with many beautiful sentences, epigrams, mottoes, and gems of thought.

This course will not materially conflict with any method which a teacher may prefer.

(The whole address was intended for those who cannot pursue a collegiate course.)

BOOK REVIEWS.

Annual Report of the State Board of Health of New Hampshire. Concord, 1891.

The tenth annual report of this series covers the year ending October 31, 1891. It is an attractive volume of 270 pages, issued under the careful editorship of Dr. Irving A. Watson, secretary of the board. Mr. George E. Waring of Newport, R. I., gives an illustrated report on the sewerage of Laconia and Keene, showing how special difficulties in drainage were overcome. Dr. D. M. Currier has a paper on the heating and ventilation of the common schools, in that northerly section where an especial degree of attention is demanded in order to keep the air of the schools pure as well as warm in winter. This problem the writer believes to have been fairly well mastered in the use of what are called "jacketed stoves", such as have been in use in Massachusetts in late years. Diagrams are published with the article, fully explaining points in the construction of the apparatus, which seems to be inexpensive in view of the results accomplished by it. Dr. Currier fully commends the system to the attention of school authorities, and to the minds of the whole people, that no care is too laborious which makes the common school, as it has already been somewhat prophetically called, "the divinest thing on earth." The causes of death in the year 1890 are considered at some length. Consumption heads the list, and has a marked increase in the year, compared with the two previous years; this increase appears to be explicable on the score of the climatic or other unknown causes to which epidemic influenza was due. The death-rate from influenza, as recorded in New Hampshire, appears to have been much lower than in some of the more southerly States, whose statistics we have seen. Vaccination and disinfection are among the other subjects selected for discussion by members of the Board.

Varicocele and its Treatment, by G. Frank Lydston, M.D., Professor of the Surgical Diseases of the Genito-urinary Organs and Venereal Diseases in the Chicago College of Physicians and Surgeons, etc. Chicago: W. T. Keener.

The book opens with a pleasant dedication to the Southern Surgical and Gynecological Association. The contents include the definition and general consideration of varicocele, its etiology, the general and morbid anatomy of the subject, the symptomatology and complications and treatment. A very complete bibliograph of varicocele concludes the book. The etiology of varicocele is most ably discussed. Under this heading the author considers the relations of varicocele to modifications of the sexual function, and holds that the former is one of the causative factors of some forms of sexual perversion and of impotency. The author clearly shows the influence of varicocele in the production of hernia. The sections devoted to treatment constitute just half of the book, and the subject is well handled. The author discusses the various operations described, and gives an increased value to his report by relating his individual experience and the results of his own extensive practical acquaintance with the subject in hand. The book is a very complete monograph on the subject of varicocele, and is well written. The illustrations are well selected, and in the main well executed. The publisher's part has been performed in the best style of the printers' art. Those interested in the subject, will make no mistake in purchasing the book.

Manual of Chemistry. A text-book specially adapted for students of Medicine and Pharmacy. By W. Simon, Ph.D., M.D. Third edition. Thoroughly revised. Philadelphia: Lea Brothers & Co.

This work has been so well received by all medical educational institutions that it is a pleasure to note the publica-

tion of this new edition, which is a genuine object lesson from front to back, the illustrations are so very fine. The text is made to correspond with the most recent advances in this interesting and valuable study.

OUTLINES OF ZOÖLOGY. By J. ARTHUR THOMPSON, M.A., F.R.S.E., with thirty-two full-page illustrations. New York: D. Appleton & Co., 1892. For sale by A. C. McClurg & Co., Chicago. Price $3.

This excellent work is designed to serve as a manual for students either in the art's course in college, or in medical schools. The author is a teacher of repute, and has the happy faculty of telling others what he knows of a subject in hand, and in a pleasing way.

ELEVENTH ANNUAL REPORT OF THE STATE BOARD OF HEALTH OF ILLINOIS, with an Appendix containing the Official Register of Physicians and Midwives, 1892.

The medical profession is quite familiar with the inestimable value of these reports, and in this issue is brought the medical, educational and sanitary work of the Board pretty well down to date.

DYSPEPSIA. This is a little manual of the Red Cross Series, by JOHN DEWAR, L.B.C.P.E., and intended for popular reading, and in which is found some directions in regard to diet that commend themselves to us as being based on sound reasoning.

THE MEDITERRANEAN SHORES OF AMERICA; OR, THE CLIMATIC, PHYSICAL AND METEOROLOGICAL CONDITIONS OF SOUTHERN CALIFORNIA. By C. P. REMONDINO, M.D., member of the American Medical Association, of the American Public Health Association, of the State Board of Health of California; Vice-President of the California State Medical Society, and of the Southern California Medical Society. Illustrated with forty-five Engravings and two double-page Maps. In one handsome, royal octavo volume, 176 pages. Extra cloth, price, $1.25, net; cheaper edition, bound in paper, price, 75 cents, net. Philadelphia: The F. A. Davis Co., Publishers, 1231 Filbert street.

In this attractive little volume the author narrates in a very pleasing way the character of the climate of Southern California, and its influence upon the people of that land as affecting not only their health, but also their religion, arts, sciences and civilization; thus giving the reader a fund of information that is of very great value.

THERAPEUTICS: ITS PRINCIPLES AND PRACTICE. By H. C. WOOD, M.D., LL.D. Eighth edition. Rearranged, rewritten and enlarged. Philadelphia: J. B. Lippencott Co.

The rapid appearance of one after another edition of a text-book indicates the high regard in which it is held by professional teachers.

This work by Professor Wood is not an exception to this statement, for there is to-day no other work that is more generally popular. In this there is found a good reason in the author's thoroughness in his descriptions, and in his clear presentation of all that is definitely known of the subjects treated. So well is the work known that an exhaustive review is now entirely out of place.

BOTANY. A CONCISE MANUAL FOR STUDENTS OF MEDICINE AND SCIENCE, by ALEX JOHNSTONE, F. G. S., with one hundred and sixty-four illustrations. New York: D. Appleton & Co. 1891. For sale by A. C. McClurg & Co. Price $1.75.

This is a digest of notes put together in a way that is useful for immediate reference by the student, and as it is upon a subject too little taught to American medical students, this excellent little book should become a stimulant for more instruction in a direction in which every physician should have a good amount of practical information.

A. B. C. OF SWEDISH GYMNASTICS. BY HARTWIG NISSEN.

This is a hand-book written in the style of questions and answers and may be made of much practical use by teachers and parents. Physicians will find in it many valuable suggestions.

NECROLOGY.

Sir William Bowman.

Sir William Bowman, the veteran ophthalmic surgeon of Kings College, London, has died at the ripe age of seventy-five years. He was appointed assistant surgeon at that college in 1840; full surgeon in 1856. In 1852, the rising of modern ophthalmology incited him to devote himself to eye work, for which he was both physically and temperamentally fitted. He possessed a hand without tremor, with fingers shapely, slender and artist-like. His anatomical knowledge was that of an official demonstrator. He early familiarized himself with the ophthalmoscope, and championed the methods of Donders and von Graefe before the British societies. His position as an ophthalmic surgeon was for years one of unchallenged supremacy, not only on account of his manipulative skill, but of his diligence as a student, "the concrete results of which will ensure his name an immortality in the archives of ophthalmology." He was the recipient of numerous honors from scientific societies, both at home and abroad.

AT the 232d regular meeting of the Gynecological Society of Boston, held May 12, 1892, it was unanimously resolved, on motion of Dr. W. S. Brown:

That this Society expresses its deep regret at the death of Dr. Henry I. Bowditch, an honorary member, who always manifested a warm interest in its welfare, often attended its meetings, and took part in its discussions.

That, in our opinion, the whole medical profession has sustained a severe loss in the death of Dr. Bowditch, whose intense love of truth, devotion to reform, and fearless expression of opinions did much to promote medical progress all over the world.

That a copy of these resolutions be sent to his family and also to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

AUGUSTUS P. CLARKE, M.D., *President.*
SAMUEL N. NELSON, M.D., *Secretary.*

THE EFFECTS OF THYMOL UPON THE URINE WHEN GIVEN IN LARGE DOSES.—In five observations, Blum (*Annales des Maladies des Organes Genito-Urinaires*, April 1892), following the example of Bohland, has given thymol in doses of from three to five grams. In three of the cases diarrhœa was produced. In all of them the urine was constantly acid and charged with large quantities of the crystals of uric acid. On the addition of a few drops of hydrochloric acid a blue-green coloration was obtained, but it was evident that the coloring matter was not indigo. It was analogous to that found in the urine of persons that have been using phenic acid. In a case, not of this series, there were found in the urine thymohydrochinone, thymol in a pure state and an acid, the nature of which was not determined.

THE THERAPEUTIC VALUE OF SUPPURATION.—Fochier has observed that in some cases of puerperal infection, when there is no important appreciable lesion, a sudden amelioration not rarely takes place coincidently with the appearance of a focus of suppuration in the iliac fossa, in the breast, in the subcutaneous cellular tissue, or about a joint. The thought suggested itself that in suitable cases the establishment of suppuration by the subcutaneous injection of essence of turpentine might be a rational procedure; and in a number of cases, successful results were by this means obtained. Governed by the same principle, Lepine and Dieulafoy each employed the injections in a desperate case of pneumonia, with a fortunate termination. About fifteen minims were injected in each situation selected. Suppuration took place in the course of a few days, but it was unattended with elevation of temperature, and the pus was aseptic.—*L' Union Médicale, No. 39, 1892, p. 465.*

THE
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No. 68 WABASH AVE., CHICAGO, ILLINOIS.

All members of the Association should send their Annual Dues to the Treasurer, RICHARD J. DUNGLISON, M.D., Lock Box 1274, Philadelphia, Pa.

MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.

This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Richard J. Dunglison, Lock Box 1274, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own Society, signed by the President and Secretary of said Society, with five dollars for annual dues. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership. On receipt of the above amount the weekly JOURNAL of the Association will be forwarded regularly.

SATURDAY, JUNE 4, 1892.

BY-LAW IV.—THE PUBLICATION OF PAPERS AND REPORTS.

No report or other paper shall be entitled to publication in the volume for the year in which it shall be presented to the Association, unless it shall be placed in the hands of the Board of Trustees on or before the first day of July. It must also be so prepared as to require no material alteration or addition at the hands of its author.

Authors of papers are required to return their proofs within two weeks after their reception; otherwise they will be passed over and omitted from the volume.

Every paper received by this Association and ordered to be published, and all plates or other means of illustration, shall be considered the exclusive property of the Association, and shall be published and sold for the exclusive benefit of the Association.

The Board of Trustees shall have full discretionary power to omit from the published *Transactions*, in part or in whole, any paper that may be referred to it by the Association, or either of the Sections, unless specially instructed to the contrary by vote of the Association.

NOTICE FROM THE REGISTRATION COMMITTEE.

The Registration Committee is exceedingly disappointed to be obliged to give up the plan of registering by mail. It was believed that by that plan the members would be saved a great annoyance and the work of the meeting of the Association very greatly facilitated. Accordingly the matter was brought to your notice in THE JOURNAL, the necessary blanks printed and forwarded to Chicago. Arrangements had been made with the editor of THE JOURNAL by which it was agreed that an enclosure should be sent to each member two weeks before the meeting, but at the last moment it was found by the editor that the postal regulations made it impossible to send such enclosures. We regret the fact, but experience thus learned shows us that next year the plan can be carried out by making certain modifications. The accommodations for registration at Detroit will be made as complete as possible.

DAVID INGLIS, Ch'm. Registration Com.

"OPIOKAPNISM" OR OPIUM SMOKING.

With the evils attending the habitual use of opium, by the mouth and through the hypodermic syringe, we are in this country already sufficiently familiar. These forms of the abuse of opium, which have been grouped under the term "opiophagism" (that is to say, opium-eating), may be found in all parts of the country and in nearly every walk in life.

That other form of opium misuse, "opiokapnism," or opium-smoking, is as yet comparatively infrequent. It is resorted to somewhat in our cities by foreigners, orientals chiefly, and by the vicious classes. If the statistics of the Treasury department are not misleading, this form of indulgence has a growing tendency. With the duty upon the drug, as prepared for smoking purposes, placed at twelve dollars per pound there was taken into the Treasury last year, $750,000. This means that 62,000 pounds entered the country through the Custom House. In addition to this enormous importation, there is reason to believe that there was smuggled into the country many thousands pounds more. It is further stated that a million pounds of the stuff has been imported in the last eleven years, at the port of San Francisco alone.

The time has come to call a halt, and if necessary to prohibit the entry of the material altogether. We think it can be shown that this particular form of the drug is never used for any legitimate purpose. We never knew a physician to prescribe it, or to be charged as the responsible cause for opiokapnism. Its sole uses are as an intoxicant or as an aid to the perpetration of illegal and vicious acts. Would it not be well that Congress should interdict absolutely the importation of smoking-opium?

As to the injury wrought by opiokapnism there can, we believe, be little room for argument. We have recently seen a copy of a document, signed by fifty native, qualified physicians of Bombay, which testifies that the opium-smoking habit among their Hindoo patients and others is an unmitigated evil to mind, body, estate and the family. This paper states that "among the consumers of opium, even when they see that the habit is undermining their constitutions and observe the sad effects in those around them, they are unable to discontinue their daily portion. One evidence of the strength this habit exerts is seen in the fact that when the means of purchase are exhausted, rather than endure the physical torture caused by its discontinuance, a man

will sell his wife and children to purchase the drug."

Our legislators will be warranted to enact laws which will prohibit the ways and means to any similar results in this country. The subject is not unworthy the immediate attention of Congress, before the evil habit has a chance to extend itself. Later on, questions of revenue will be liable to obtrude themselves, and render compulsory prohibition more difficult.

A RECENT OUTBREAK OF TYPHUS FEVER IN LONDON.

One of our illustrated newspapers touched up the subject of undesirable immigration, with a sorry looking picture of dirty and unkempt representatives, brought to our shores by the cheap steerage steamships; and under the cut was the legend, "This is the only kind of *raw material* that is imported now-a-days." Not only does this raw material come to us in a dirty condition, but it is infected or infective. And what is worse, it is not susceptible of fumigation, like the filthy rags that come to us on the same cheap steamships, especially those hailing from the Mediterranean ports.

The sole or chief advantage of this raw human importation is reaped by the steamship companies whose vessels are given an employment at low remuneration, instead of rotting at their wharves in idleness. The great disadvantages are experienced by the United States, because they are forced to assimilate all this unwelcome "raw material" and are compelled to defend themselves, at great cost and labor, against the infection endangering our ports and cities.

Not to follow out this reflection in a wearisome way, we believe it is right and expedient to ask the thoughtful men of our profession to con over in private and to debate with one another in public what must the end be of all this sanitary inattention and blundering on the part of our legislators. If these latter are, in point of fact, shirking their sanitary duties, they or some others of our "dear fellow citizens" will have to pay the penalty.

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Such an exhibit might be made the nucleus of a grand pathological museum, that would share honors with the superb and invaluable collection in the Army Medical Museum in Washington.

It is only for the Association to determine that it will have such a museum, and much of the work is done.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.
WM. B. ATKINSON, Permanent Sec'y, 1400 Pine Street.

PHILADELPHIA, May 20, 1892.

DEAR SIR,—At our session held this day in Harrisburg, the following resolutions were adopted:

Resolved, That the Medical Society of the State of Pennsylvania hereby expresses its highest disapprobation of the practice of giving certificates or testimonials to secret preparations alleged to be of medicinal virtue, and calls the attention of the affiliated County Societies to the fact that such action on the part of members of the said societies is in derogation of the dignity of the profession, and in violation of the letter and the spirit of the Code of Ethics of the American Medical Association and of this Society.

Resolved, That this Society likewise expresses its disapprobation of the practice of inserting advertisements of secret preparations in the columns of medical journals, such action being an insult to the intelligence of the profession, and a degradation of journals indulging therein to the level of the patent-medicine almanac. Especially to be condemned is the action of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION in admitting such advertisements.

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THE ASSOCIATION OF AMERICAN MEDICAL EDITORS will hold a meeting in the parlors of the DETROIT MEDICAL AND LIBRARY ASSOCIATION, Cowie Building, Detroit, on Monday, June 6, at 7 P.M., for the election of officers and transaction of business. J. C. Culbertson, Secretary.

THE RUSH MONUMENT.—The members of the medical profession who may be in Detroit, in attendance at the meeting of the American Medical Association, the American Academy of Medicine, the American Medical Temperance Association, the Association of Medical Editors, the Medical College Association, and other correlated national medical organizations are urgently solicited to contribute to the erection of this monument. Cash contributions or checks may be handed to the representatives of the committee at the Association Hall or to the Treasurer, Dr. DeWitt C. Patterson, of Washington, D. C., at the Cadillac Hotel.

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How an Electric Current may be Absorbed Into the Life Current of Human Beings; by Marion Guild Walcott, of Washington; is the title of a paper published in our last issue, and that we had eliminated from the papers read at the Annual Meeting in Washington, but by mistake got into our printer's hands. The paper was among those given to the editor of THE JOURNAL at Washington. It is hardly necessary to say the subject-matter is not in accord with the scientific knowledge of the day.

DRS. ALBERT L. GIHON, U. S. N., AND J. B. LINDSLEY, deserve the gratitude of the Association for so willingly at short notice taking the places of Drs. J. S. Cain and C. A. Lindsley in delivering the Addresses on General and State Medicine.

THE MONUMENT TO BENJAMIN RUSH.—The attention of the members of the medical profession is again called to the monument to Dr. Benjamin Rush, the great patriot physician of the Revolution, which it is proposed to erect in the city of Washington among those of the other illustrious founders of the Republic. In the person of this eminent medical man—"the greatest physician this country has ever produced," as he has been fitly styled by a very eminent physician, happily still living—*Medicine* will be worthily represented at the National Capital, as a profession which can boast of having public spirited citizens, fearless patriots, brave warriors, and wise legislators among its ranks. Benjamin Rush was, himself, all these. The members of the profession, who have not already done so, are urgently solicited to come to Detroit to attend the meeting of the American Medical Association, prepared to contribute towards the erection of this monument, or to send their subscriptions *at once* to DeWitt C. Patterson, M.D., Treasurer, 919 I Street, N. W., Washington, D. C.

ALBERT L. GIHON, M.D., Chairman.
GEORGE H. ROHE, M.D., Secretary.

SOCIETY PROCEEDINGS.

American Surgical Association.

Annual Meeting, May 31, June 2 and 3.

ADDRESS OF THE PRESIDENT.

By Dr. P. S. Conner, of Cincinnati.

Fellows of the American Surgical Association:—After a series of meetings at the National Capital, it is fitting that our first journeying should bring us to a city with which is associated so much that is good and great in the history of our country, political, literary, scientific and professional. Here, as a part of the University, that, like Suleinam of old is *Mater et Caput* of the schools, was established the second medical school in the Western Hemisphere, where for more than a century, scientific medicine has been well and thoroughly taught. The Massachusetts General and the City Hospital have been the theatres of much work that has strongly effected the practice of our art the world over, and one of them will ever be remembered as the place in which "the problem of surgical anæsthesia was definitively solved." Their surgeons, learned, skilful, progressive and inventive, by labors and teachings have honored themselves and the profession of which they have been so distinguished members. Not in America only, but everywhere the profession has held and now holds in high esteem the Medicine and Surgery of Boston.

The active life of the Surgical Association, that began with the meeting in Philadelphia, embraces a ten-year period than which no other in professional history has been more strongly characterized by extent and accuracy of investigation, by scientific judicious experimentation, by the discovery of important facts, by improvements in the technique of old operations and by the introduction and general adoption of new procedures. In the study of the causes of disease many master minds have been at work, and more positive knowledge has been gained than in all time before, so that in the bacteriological laboratories, a new pathology has been worked out, in large measure revolutionary of both opinion and practice. Speculation and theory have given place to experimentation and fact and the disease producing influence of airs, of earths, of waters have been found to lie in organisms that have been seized upon, separated, classified and tested.

We can scarcely realize that it was only in 1882 that the startling announcement was made that tuberculosis was consequent upon the presence and action of a definite microörganism that could be isolated, cultivated and inoculated; and that so short a time ago, the doubters were many more indeed than the believers. In this single decade just passed the fact has become universally acknowledged, the sceptics are now but professional curiosities; a new literature has been written; even a new language created in which strumous (except as a synonym of tuberculous) has no more place than phlogiston.

The long known chronic affections of bone, of joints, of glands, of skin, have been shown to be in great measure the result of the presence and action of a bacillus, that every where and under all circumstances moves in one and the same way and that a destructive one, though antagonized at every step by the healthy tissues (not seldom successfully) and subject more or less completely to the power of our art, directed to the procuring of the destruction or encapsulation of the germ, the removal of the infected tissues or the taking away of the affected part. We can understand now, why rest is of so much importance, why excision or erasion may be followed as it so often is by non-recurrence; why on the other hand, in spite of or even because of operative interference, parts near or remote become secondarily infected.

The most important work, as it seems to me, that has been done in connection with surgical tuberculosis is that which has had for its object, the finding out and properly applying a therapeutic agent which will destroy the organism and secure its expulsion from the body, or secure such condensation of non-infected tissue about it as shall form a wall around and by encapsulation render it harmless. Far better will it be to administer generally or locally a remedy that will remove the bacillus or make it innocuous than to do the most brilliant operation followed by the most rapid healing and recovery in large measure of functional integrity. The end is far from having been reached, but a long step in advance has been made, and the reviewer of the work of another ten years, may find the result secured and a non-operative truly murative treatment in use. It is certainly to be hoped, though, that scientific medicine will not again have to pass through such an experience as that of a couple of years ago, the history of which will always be of much interest to the students of psychology and of mental epidemics.

Of the three wound complications which from the earliest times have been the bane of surgery, septic infection, erysipelas and tetanus, the cause of only the first had been determined a decade ago: that of each is now known, and known because of the application to the tissues and fluids of those affected by them of the same methods of bacteriological investigation that had revealed the existence and life history of the pyogenic cocci. In erysipelas have been satisfied the three requirements of proof of bacterial origin,

isolation, cultivation and inoculation into the human subject with resulting development of the original disease. Not a few of the long time perplexing questions connected with tetanus have found answer in the discovered identity of its causative organism with the earth bacillus and in the anærobic nature of it. In every case that has come under my observation, so far as I can now recall, except those associated with toy pistol wounds, I am able to trace either direct contact with the naked ground, or probable almost unavoidable contamination of the wound with dust and dirt. In the toy pistol wounds of the hands there is that exclusion of air and retention of fluid that are most favorable to the growth and activity of secretion of an organism that flourishes in the absence of oxygen, an organism that at the time of injury or later was located doubtless upon the dirty hand. Knowledge of the habits of the bacillus is sufficient of itself to indicate the treatment to be pursued that tetanus may not supervene, to-wit, thorough opening up and free drainage of the wound. Further, not only has the causative organism been found, but also it has been shown that there may be developed from it an antidotal chemical agent, the injection of which can produce immunity or act remedially upon a tetanic patient.

It is in the treatment of the diseases and injuries of the viscera and their envelopes that the greatest advances in our art have been made in these later years. Numerous and carefully conducted experiments upon animals and operative procedures upon man, new, bold and highly successful, have again and again been reported; and in the work that has been done, our own Fellows have no minor part.

The abdominal cavity, that for so long a time was an almost sacred territory not to be invaded except under peculiar circumstances and for the relief of a very few morbid conditions, has, because of the secured protection against sepsis, become one of the more common fields of operation, done on account of wounds, of tumors, of obstructions and of infective inflammation. Such operations not seldom have been, it may be believed, ill-advised, ill-timed, unnecessary and harmful, entered upon by inexperienced men, whose eagerness to cut has found explanation in the fact that in simple abdominal section few operative difficulties are usually met with and no dangerous hæmorrhage is to be expected, the arresting of which might test the knowledge and skill of the operator.

Penetrating and perforating wounds of the hollow and solid viscera are no longer treated solely by opium and ice with a resulting fatality truly appalling, but by section of the wall, suture of the wound, ligation of the bleeding vessels and antiseptic plugging, if necessary, of openings in the solid organs. The mortality rate is still unfortunately very high; how high can not be definitely stated, since the number of reported cases is yet limited and includes without doubt an undue proportion of successful results. Not a few of the deaths, it cannot be doubted, have been due to the delay, the incompleteness and the imperfection of the operation; but many must be credited to the damage primarily done. Made by bullets of other than the smallest calibre, a pistol wound of the stomach, of the intestines, of the mesentery or of the liver, is likely to prove mortal from shock or hæmorrhage even though treated properly and skilfully; and is almost absolutely certain to do so if fæcal extravasation has occurred and septic inflammation has set in. It cannot be questioned but that wounds made by very small balls may be, and have been recovered from without operative interference, and there is good reason for believing that in the absence of symptoms of active hæmorrhage, such wounds will do as well or better without as with laparotomy; an operation, however improved its technique, is still an addition to the risk of the case. It is as unwise as it is untrue to declare that there are no dangers attaching to incision of the abdominal walls and exploration of the intestinal tract. But when it is a bullet of large size that has entered the cavity, the safety of the patient almost certainly lies, if anywhere, in speedy, thorough operation. It is hard to understand such statistics as those of Reclus, in which it would appear that while without operation only 35 per cent. died, with operation, the mortality rate was from 75 per cent. to 86 per cent. That in three out of four, or six out of seven patients thus wounded, the result was a fatal one may be believed, but that it should be so in only one out of four expectantly treated, is, to say the least, very remarkable. Not the smallest of difficulties often associated with these wounds, is the determination of the occurrence of penetration, which at times can only be through opening up and following down of the parietal wound. Inflation of the bowel with hydrogen gas, the earlier experiments with which were so brilliant and so captivating, will not always give the desired information and may be positively detrimental to the best interests of the patient, as it certainly has been in certain cases already put on record.

The septic inflammations about the head of the colon, originating so generally in the appendix (which some would regard as an "intestinal tonsil" but may well be looked upon as a useless survival of a once important organ), have in the period under consideration been brought within the province of the surgeon, not as before at a late day when the resulting abscess has fortunately come well forward toward the surface, but at an early stage when by evacuation of the fluid with or without removal of the appendix, relief may be afforded and the patient be protected against the lethal effects of perforative peritonitis or perinephritic suppuration. The cases of acute disturbance in the region of the cæcum due to an overloaded bowel or to the catarrhal inflammation, will find relief in the future as in the past in the therapeutic measures of the physician; but suppurative gangrene producing appendicitis, it has been proven, and that chiefly by the experience of our American surgeons, can with safety be treated only by the knife. Whether or not it is advisable to remove, during a quiescent stage, the appendix that has been the seat of repeated attacks of inflammation, is a question as yet unsettled.

A very cursory examination of the professional literature, home and foreign, for the past decade, would convince any one that an immense amount of work, experimental and operative, has been done in the determination of the proper and most advisable methods of treatment in cases of obstruction, acute and chronic, malignant and non-malignant, located in any part of the tract from the cardiac extremity of the stomach to the lower end of the rectum. Strictures have been dilated, affected areas removed, anastomosis secured, "cut-offs" established, new openings formed; with the result in favorable cases of effecting cure or affording relief. The technique of the older operations has been much improved, modifications have been introduced, and not a few altogether new procedures have been devised, tested and widely accepted.

Pyloric stenosis, for which ten years ago pylorectomy was all that the surgeon could offer, may now, if of non-malignant character, be relieved by digital divulsion through the open stomach, by curetting, by a pyloro-plastic operation or by gastro-enterostomy; and if due to malignant disease, by the latter operation, in every way to be preferred to excision of the cancerous mass, being speedier and easier of execution and having a mortality rate but one-half or perhaps only one-fourth as great. In its performance, as in similar operations upon lower portions of the intestine, much use has been made of the approximation plates, as of decalcified bone, of leather or of potato, and of cat-gut rings and mats;

but at the present time there is certainly a strong and growing feeling that their employment is not only not necessary, but rather an injury than a benefit to the patient. It may well be questioned if, after all, viewing the subject in its widest aspect, operations for cancer of the stomach have really been or can be of much service. They certainly have often afforded much temporary relief and are to be resorted to when suffering is great and starvation is imminent; but on the other hand the prolongation of life when the operation is recovered from, is with only now and then an exception, but slight; excision has almost never protected from recurrence, the abnormal anasmotoses are very likely to speedily become seriously contracted with resulting loss of the benefit primarily secured and the necessitating disease must go on increasing, though it may be more slowly than before. In not a few of the reported cases, the condition of the patients at the time of the operation was fairly good, the suffering was slight and the general strength but little impaired, yet as the direct result of the surgical interference life was cut short. If we balance these cases against those in which a few week or months were gained by excision or anastomosis, it is very questionable if we can find in the result of operation any material addition to the sum total of life.

(To be concluded.)

DOMESTIC CORRESPONDENCE.

To the Editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION:

I take pleasure in informing you that at the last meeting of the Medical Society of the State of West Virginia, May 25, 26 and 27, at Clarksburg, W. Va., the resolution was unanimously adopted to appoint a special committee, which should urge the passage of the Caldwell Bill, creating a Cabinet officer of Public Health, upon the Senators and Representatives in Congress from our State.

West Virginia is in line, and if all State Societies work in unison under the leadership of the American Medical Association, we surely will be able to pass the Bill and accomplish other reforms to the honor of our profession. One of the subjects which was extensively discussed at our meeting was the "water supply and its relation to the spread of typhoid fever." The majority of the debaters admitted that chemical analysis of the water was useless. Topographical, and especially bacteriological investigations are necessary. State laws are entirely inefficient, for it is only through *National* legislation that it is possible to enact laws which are based on thoroughly conducted scientific investigations. Here was as good a proof as any for the necessity of a "National Secretary of Public Health," for under his direction this most important question of a wholesome water supply could have a better chance of being properly solved. The comments made in favor of the Bill are surely an indication that every member will try to assist the committee in urging the matter. A former member of the Legislature declared "that the doctors could accomplish anything they wanted, if they only showed that *they were thoroughly in earnest about it.*" Let us show a united front at the Detroit meeting. G. A. ASCHMAN, M.D.

Wheeling, W. Va.

MISCELLANY.

THE MEDICAL SOCIETY OF THE STATE OF WASHINGTON held its third annual meeting at North Yakima, May 11 and 12. The attendance was not large, but the interest taken in the papers and discussions surpassed that of both the previous meetings.

The following papers were read: "Report on Practice of Medicine," by C. K. Merriam, of Spokane; "Typhoid Fever and its Treatment," by C. P. Thomas, of Fairhaven; "Report of a Case of Leprosy," by H. C. Willison, of Port Townsend; "Report of Eight Major Amputations," and "Report of a Melanotic Sarcoma of Neck," by J. B. Eagleson, of Seattle; "Report on Ophthalmology and Otology," by A. B. Kibbe, of Seattle; "Some Practical Points on Diseases of the Ear," by L. R. Thomson, of Spokane; "Sympathetic Ophthalmia," by G. H. Mauzey, of Spokane; "Treatment of Immature Cataract by the Kalish Method," by G. S. Armstrong, of Olympia; "Report of Four Laparotomies," by C. A. Smith, of Seattle; "Treatment of Epilepsy," by C. W. Sharples, of Seattle; "Report on History and Necrology," by G. A. Weed, of Seattle.

The following officers were elected for the ensuing year: President, N. Fred. Essig, of Spokane; First Vice-President, G. S. Armstrong, of Olympia; Second Vice-President, F. M. Bell, of Kelso; Secretary, G. D. Shaver, of Tacoma; Treasurer, J. B. Eagleson, of Seattle.

The next meeting will be held at Tacoma, on the first Wednesday in May, 1893.

OFFICIAL LIST OF CHANGES in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from May 21, 1892, to May 27, 1892.

Capt. Henry S. Turrill, Asst. Surgeon U. S. A., granted leave of absence for three months.

Capt. Aug. A. De Loffre, Asst. Surgeon U. S. A., the leave of absence on surgeon's certificate of disability granted in S. O. 93, A. G. O., April 20, is extended one month on surgeon's certificate of disability.

OFFICIAL LIST OF CHANGES in the Medical Corps of the U. S. Navy, for the Week Ending May 28, 1892.

Medical Director T. J. Turner (retired) granted one year's leave of absence, with permission to leave the United States.

Asst. Surgeon H. N. T. Harris, promoted to P. A. Surgeon.

Asst. Surgeon Geo. B. Wilson, promoted to P. A. Surgeon.

Asst. Surgeon Manly F. Gates, ordered to Naval Hospital, Portsmouth, N. H.

P. A. Surgeon J. F. Uric, detached from Naval Hospital, Portsmouth, N. H., and to the U. S. S. "Chicago."

P. A. Surgeon J. C. Byrnes, detached from the U. S. S. "Chicago," and granted three months' leave of absence.

OFFICIAL LIST OF CHANGES of Stations and Duties of Medical Officers of the U. S. Marine-Hospital Service, for the Two Weeks Ending May 21, 1892.

Surgeon R. D. Murray, granted leave of absence for fifteen days. May 14, 1892.

Surgeon J. B. Hamilton, granted leave of absence for seven days. May 20, 1892.

Surgeon J. M. Gassaway, granted leave of absence for ten days. May 10, 1892.

Surgeon John Godfrey, when relieved as Medical Inspector of Immigrants, to resume command of station at New York. May 11, 1892.

Surgeon Fairfax Irwin, to proceed to New Bedford, Mass., on special duty. May 17, 1892.

Surgeon H. R. Carter, to proceed to Gallipolis, O., on special duty. May 18, 1892.

Surgeon W. A. Wheeler, detailed as Medical Inspector of Immigrants, port of New York. May 11, 1892.

P. A. Surgeon C. E. Banks, to assume command of Service at Portland, Me. May 11, 1892.

P. A. Surgeon S. C. Devan, to assume command of Service at Norfolk, Va. May 11, 1892.

P. A. Surgeon T. B. Perry, to assume charge of Cape Charles Quarantine Station. May 14, 1892.

P. A. Surgeon R. M. Woodward, granted leave of absence for five days. May 16, 1892.

P. A. Surgeon G. T. Vaughan, detailed as recorder of Board for the physical examination of candidates, Revenue Marine Service. May 9, 1892.

Asst. Surgeon C. P. Wertenbaker, granted leave of absence for seven days. May 10, 1892.

Asst. Surgeon E. R. Houghton, to assume command of Service at Vineyard Haven, Mass. May 11, 1892.

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189